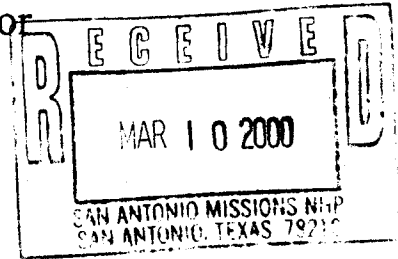




United States Department of the Interior

NATIONAL PARK SERVICE
GUADALUPE MOUNTAINS NATIONAL PARK
HC 60, BOX 400
SALT FLAT, TEXAS 79847-9400
915/828-3251



IN REPLY REFER TO:
March 7, 2000

Memorandum

To: Dave Larson, Amistad NRA
Vidal Davila, Big Bend NP
~~Resource Mgt., Big Thicket NP~~
John Heiner, Ft. Davis NHS
Resource Mgt., Lake Meredith NRA/Alibates
Bob Howard, LBJ NHP
~~Resource Mgt., Padre Island NS~~
~~Resource Mgt., Palo Alto Battlefield NHS~~
~~Resource Mgt., San Antonio Missions NHP~~

SAN ANTONIO MISSIONS NHP			
RTG	XXXXXXXX	CC: <i>WJ</i>	DATE
☒	SUPT.		
	ASST SUPT.		
	CHIEF ADMIN.		
	CHIEF INTERP.		
☒	CHIEF PROF SVCS.		
	CHIEF RMVP		
	CHIEF MAINT.		
	EXCESS PROP.		
	FILES		

From: Janice Wobbenhorst, Chief, Resource Mgt. & Visitor Protection,
Guadalupe Mountains NP

Subject: Nature Conservancy Report

Recently, I was meeting with the Nature Conservancy staff here in Texas and they were telling me about a report they did for the National Park Service on "Rare Plant and Animal Species on NPS Lands in Texas."

Since we had not seen this report, I thought that maybe you had not either. So, enclosed is a copy of the report for each of you. Hope it is of use to you.

Hope you are all having a great spring.

Janice A. Wobbenhorst

cc: Armstrong
Bell

**RARE PLANT AND ANIMAL SPECIES ON
NATIONAL PARK SERVICE LANDS IN TEXAS**

Compiled By

WILLIAM CARR
JOHN KARGES
MARK GALLYOUN

Texas Conservation Data Center
The Nature Conservancy of Texas
San Antonio, Texas

For

The Nature Conservancy
Central Conservation Databases
Arlington, Virginia

August, 1998

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INTRODUCTION

This report documents an investigation into the status of information on globally rare plants and animals with regard to National Park Service (NPS) managed lands in Texas. Globally rare species are defined here as species ranked G3T3 or higher (according to the global ranking system used by the International Network of Natural Heritage Programs and Conservation Data Centers,) along with any others listed or proposed for protected status by the U.S. Fish and Wildlife Service under the federal Endangered Species Act. This work was done to assess current knowledge for this type of information within the Texas Conservation Data Center's (TXCDC) data systems, within the National Park Service's systems, and also within the sphere of knowledge beyond those two systems. The goal is to determine the level of discrepancy between these three domains and eventually to attempt to reduce that discrepancy as much as possible.

Included in this report are species listed in some form as "species of concern" in at least one of several possible sources: 1) the Texas Conservation Data Center's Biological and Conservation Database (BCD); 2) the Texas Parks and Wildlife Department's records; and 3) those listed specifically as endangered, threatened or as candidate species by the U.S. Fish and Wildlife Service. For most species tabulated, the global rank is G3 or higher. Some animal species ranked G4 are included because they are elusive (therefore they are rarely encountered) or of undetermined presence within some park lands. On some parks, certain taxa are included even if few or no records exist, because the park is within a known migratory flyway. Others are listed with questionable status categories because of the paucity of inventory or population data.

In the past, taxa ranked G1 and G2 were actively tracked by the Texas Natural Heritage Program (Texas Parks and Wildlife Department) while less rare (G3) taxa were not tracked. Since that department was the

PART I. Managed Area Basic Records and Site Basic Record Equi-site records for national parks.

The National Park Service managed areas in Texas included in the investigations for this report are as follows:

PARK NAME	MACODE
Alibates Flint Quarries National Monument	M.USTXHP*298
Amistad National Recreation Area	M.USTXHP*35
Big Bend National Park	M.USTXHP*38
Big Thicket National Preserve	M.USTXHP*40
Fort Davis National Historic Site	M.USTXHP*41
Guadalupe Mountains National Park	M.USTXHP*42
Lake Meredith National Recreation Area	M.USTXHP*290
Lyndon B. Johnson National Historical Park	M.USTXHP*295
Padre Island National Seashore	M.USTXHP*52
Palo Alto Battlefield National Historic Site	M.USTXHP*294
San Antonio Missions National Historical Park	M.USTXHP*293

The MACODE is the key identifier for Managed Area Basic Records (MABRs) in the Texas Conservation Data Center's BCD. The MABRs for these national parks were provided to TNC Central Databases. It should be noted that no national parks in Texas had equi-site records in the BCD "Sites" database file.

PART II. Rare species documented on National Park Service areas in Texas.

II.a. Rare species documented by Element Occurrence Records in the TXCDC Biological and Conservation Data System.

Some occurrences of globally rare species on national parks in Texas are documented by Element Occurrence Records (EORs) in the TXCDC BCD. EORs for rare species were provided to TNC Central Databases, along with related records of bibliographic information (records from the BCD "Source Abstracts" file.) The species documented by EORs are listed below for their respective national parks.

- Alibates Flint Quarries National Monument – Rare Species with EORs**

No EORs are attributed to Alibates Flint Quarries National Monument in the TXCDC BCD.

- Amistad National Recreation Area – Rare Species with EORs**

Scientific Name	Common Name	G/S Rank
<i>Diphylla ecaudata</i>	Hairy-Legged Vampire	G5/SA
<i>Gambusia amistadensis</i>	Amistad Gambusia	GX/SX
<i>Icterus cucullatus cucullatus</i>	Mexican Hooded Oriole	G5TU/S4B

- Big Bend National Park – Rare Species with EORs**

See Appendix 2 for a general discussion on the rare animals of Big Bend National Park.

Scientific Name	Common Name	G/S Rank
<i>Amsonia glaberrima</i>	Smooth Blue-Star	G3Q/S2
<i>Bartonia texana</i>	Texas Screwstem	G2/S2
<i>Cyperus grayioides</i>	Mohlenbrock's Umbrella-Sedge	G3/S3
<i>Phlox nivalis ssp. texensis</i>	Texas Trailing Phlox	G4T2/S2
<i>Picoides borealis</i>	Red-Cockaded Woodpecker	G3/S2B
<i>Pituophis melanoleucus ruthveni</i>	Louisiana Pine Snake	G5T3/S2
<i>Prenanthes barbata</i>	Barbed Rattlesnake-Root	G3/S2
<i>Silene subciliata</i>	Scarlet Catchfly	G3/S3

- Fort Davis National Historic Site – Rare Species with EORs

Scientific Name	Common Name	G/S Rank
<i>Croton suaveolens</i>	Scented Croton	G2/S2
<i>Sedum havardii</i>	Havard's Stonecrop	G2/S2

- Guadalupe Mountains National Park – Rare Species with EORs

Scientific Name	Common Name	G/S Rank
<i>Chaetopappa hersheyi</i>	Mat Leastdaisy	G3/S2
<i>Chrysothamnus spathulatus</i>	Spoonleaf Rabbitbrush	G3/S2
<i>Echinocereus lloydii</i>	Lloyd's Hedgehog Cactus	G2Q/S2
<i>Escobaria guadalupensis</i>	Guadalupe Mountains Pincushion Cactus	G1/S1
<i>Festuca ligulata</i>	Guadalupe Mountains Fescue	G1/S1
<i>Hedeoma apiculatum</i>	Mckittrick Pennyroyal	G3/S2
<i>Hexalectris revoluta</i>	Chisos Coral-Root	G1/S1
<i>Hymenopappus biennis</i>	Biennial Woollywhite	G2/S2
<i>Lepidospartum burgessii</i>	Gypsum Scalebroom	G2/S1
<i>Lesquerella valida</i>	Strong Bladderpod	G2/S1
<i>Nolina arenicola</i>	Sand Sacahuista	G2Q/S2
<i>Prunus murrayana</i>	Murray's Plum	G2/S2
<i>Pseudoclappia arenaria</i>	Sand False Clappia-Bush	G3/S2
<i>Salvia summa</i>	Mountain Sage	G3/S2
<i>Sibara grisea</i>	Gray Sibara	G3?/S1
<i>Streptanthus sparsiflorus</i>	Sparsely-Flowered Jewelflower	G2/S2
<i>Symphoricarpos guadalupensis</i>	Mckittrick Snowberry	G1/S1
<i>Valeriana texana</i>	Guadalupe Mountains Valerian	G3/S2
<i>Viola guadalupensis</i>	Guadalupe Mountains Violet	G1/S1

- Lake Meredith National Recreation Area – Rare Species with EORs

No EORs are attributed to Lake Meredith National Recreation Area in the TXCDC BCD.

- Lyndon B. Johnson National Historical Park – Rare Species with EORs

Notes:

¹Although this species is ranked G4, it is noted here because the disjunct population in question may be an undescribed endemic species other than that named. See Appendix 2 for further details.

Scientific Name	Common Name	G/S Rank
<i>Cyprinella proserpina</i>	Proserpine Shiner	G3/S2
<i>Dionda diaboli</i>	Devils River Minnow	G1/S1
<i>Etheostoma grahami</i>	Rio Grande Darter	G3/S2
<i>Cyprinodon eximius</i>	Conchos Pupfish	G4/S1 ¹
<i>Notropis jemezianus</i>	Rio Grande Shiner	G3/S3

• **Big Bend National Park – Documented Rare Species Without EORs**

See Appendix 2 for a general discussion on the rare animals of Big Bend National Park.

Notes:

¹Although this species is ranked G4, it is included here due to its former candidate status for listing as a federally endangered species.

²These species are not ranked by the Texas Conservation Data Center, but are noted here due to their potential conservation importance. Further attention is needed to better understand the status of these species.

³These rare species are as yet undescribed, and are of conservation concern.

Scientific Name	Common Name	G/S Rank
<i>Agathymus chisosensis</i>	Tawny Giant Skipper	G2?/S2?
<i>Andropogon spadicus</i>	Reddish-Brown Bluestem	G3/S1
<i>Anulocaulis leiosolenus</i> var. <i>lasianthus</i>	Chihuahuan Ringstem	G4T3/S3
<i>Apodemus chisosensis</i>	Chisos Metalmark (A Butterfly)	G1G3/S?
<i>Brickellia brachyphylla</i> var. <i>hinckleyi</i>	Hinckley's Brickellbush	G5T2Q/S2
<i>Brickellia brachyphylla</i> var. <i>terlinguensis</i>	Terlingua Brickellbush	G5TH/SH
<i>Camptostoma ornatum</i>	Mexican Stoneroller	G3/S1
<i>Cardamine macrocarpa</i> var. <i>texana</i>	Texas Largeseed Bittercress	G3T2/S2
<i>Centruroides chisosarius</i>	A Scorpion	Not Ranked ²
<i>Chamaesyce chaetocalyx</i> var. <i>triligulata</i>	Three-Tongue Spurge	G5T1/S1
<i>Chamaesyce polycarpa</i> var. <i>simulans</i>	Big Bend Spurge	G5T3/S3
<i>Cirsium turneri</i>	Cliff Thistle	G3/S3
<i>Cleomella longipes</i>	Chiricahua Rhombo-Pod	G3/S2
<i>Croton potsii</i> var. <i>thermophilus</i>	Leatherweed Croton	G5T2/S1
<i>Croton suaveolens</i>	Scented Croton	G3/S2
<i>Cyrtinus beckeri</i>	A Long-Horned Wood-Boring Beetle	Not Ranked ²
<i>Dipolocentrus bigbensis</i>	A Scorpion	Not Ranked ²
<i>Echinocereus chisoensis</i> var. <i>chisoensis</i>	Chisos Hedgehog Cactus	G2T1Q/S1
<i>Eriogonum hemipterum</i> var. <i>hemipterum</i>	Half-Wing Wild-Buckwheat	G3T3/S2

Scientific Name	Common Name	G/S Rank
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-Eared Bat	G3G4/S3
<i>Gaillardia aestivalis</i> var. <i>winkleri</i>	Winkler's Firewheel	G5T1/S1
<i>Liatris tenuis</i>	Slender Gayfeather	G3/S3
<i>Oxyopolis ternata</i>	Savanna Cowbane	G3/S1
<i>Prenanthes barbata</i>	Barbed Rattlesnake-Root	G2G3/S2
<i>Helenium drummondii</i>	Fringed Sneezeweed	G3/S3
<i>Rudbeckia nitida</i> var. <i>texana</i>	Shiny Coneflower	G3?T3/SR
<i>Spigelia texana</i>	Texas Pinkroot	G3/S3
<i>Xyris louisianica</i>	Kral's Yellow-Eyed Grass	G3/S1

- Fort Davis National Historic Site – Documented Rare Species Without EORs

No rare species are documented in the literature and other sources (other than the BCD, see Part II.a.) examined by TXCDC staff as occurring at Fort Davis National Historic Site.

- Guadalupe Mountains National Park – Documented Rare Species Without EORs

Notes:

¹ See recent literature regarding taxonomic changes.

²Historically recorded, ranked GH/SH.

Scientific Name	Common Name	G/S Rank
<i>Aquilegia chrysantha</i> var. <i>chaplinei</i>	Guadalupe Mountains Columbine	G4T2/S2
<i>Argyrochosma limitanea</i> ssp. <i>mexicana</i>	A Fern	G4G5T3?/S2
<i>Aster laevis</i> var. <i>guadalupensis</i>	Guadalupe Mountains Aster	G5T1Q/S1
<i>Astragalus albulus</i>	Cibola Milkvetch	G3G4/S1
<i>Astragalus gypsodes</i>	Gyp Ground-Plum	G2/S2
<i>Astragalus waterfallii</i>	Waterfall's Milkvetch	G3/S3
<i>Brickellia parvula</i>	Mt. Davis Brickellbush	G3/S1
<i>Centaureum nudicaule</i>	Santa Catalina Mountain Centaury	G2G4/SR
<i>Chrysothamnus nauseosus</i> ssp. <i>texensis</i>	Guadalupe Mountains Rabbitbrush	G5T2/S1
<i>Croton suaveolens</i>	Scented Croton	G3/S3
<i>Cryptantha paysonii</i>	Payson's Hiddenflower	G3/S1
<i>Cystopteris utahensis</i>	Utah Fragile-Fern	G3?/SR
<i>Galium fendleri</i>	Fendler's Bedstraw	G3G4/S1
<i>Hackelia besseyi</i>	Bessey's Tickseed	G3?/S2
<i>Heterotheca viscida</i>	Cliff Goldenaster	G3/S3
<i>Ipomopsis arizonica</i>	Arizona Ipomopsis	G3G4/SRF? ¹
<i>Limnebius texanus</i>	Texas Minute Moss Beetle	GH/SH ²
<i>Machaeranthera blephariphylla</i>	White-Eye Goldenweed	G3/S2
<i>Matelea producta</i>	A Milkvine	G3G4/S3
<i>Penstemon brevibarbatulus</i>	A Penstemon	G3/S3 ¹
<i>Penstemon cardinalis</i> ssp. <i>regalis</i>	Royal Red Penstemon	G3T2/S2
<i>Pinaropappus parvus</i>	Little Rock-Lettuce	G3/S3
<i>Polygala rimulicola</i> var.	Rock-Crevise Milkwort	G3T3/S2

The TXCDC staff knows of no investigations into the presence of rare plants on the park. No rare plant taxa are documented from the park in the TXCDC BCD or other sources.

Notes:

¹ Although this species is ranked G4, it is included here because its occurrence on this park is at the northern limit of its range.

Scientific Name	Common Name	G/S Rank
<i>Aimophila botterii</i>	Botteri's Sparrow	G4/S4B

- **San Antonio Missions National Historical Park – Documented Rare Species Without EORs**

No rare species are documented in the literature and other sources examined by TXCDC staff as occurring at San Antonio Missions National Historical Park. TXCDC staff knows of no investigations into the presence of rare taxa on the park.

Part III. Globally rare species not documented as occurring, but potentially occurring on National Park Service areas in Texas, based on expert opinion.

While the previous section of this report addressed documented rare species occurrences, it is also likely that some globally rare species are not documented as occurring on the national parks in Texas, despite the fact that they do indeed occur there. These are species for which the least amount of occurrence information is generally available; therefore they are often among the least understood in terms of conservation concern. These species are not documented in the "EO" file as occurring on the national parks in Texas, nor in any other domain, but they are known from appropriate habitat within the vicinity. These are species that might likely be found on national parks given further inventory effort.

Below are two separate listings (one for plants and one for animals) that list globally rare species for land units administered by the National Park Service in Texas. A list is given for each park. Following in Appendices 1 & 2 are notes and discussion on many of these species. Appendix 3 provides bibliographic references for literature cited in those notes and in the discussion for the lists below.

PLANTS – POTENTIALLY OCCURRING RARE PLANTS

- **Alibates Flint Quarries National Monument – Potentially Occurring Rare Plants**

G3T3 or rarer plant taxa that are of potential occurrence at Alibates Flint Quarries National Monument. See Appendix 1 for further information about each of these taxa.

Notes:

¹ The sole specimen of this taxon from the Texas Panhandle may be misidentified; the likelihood of its occurrence at Alibates Flint Quarries National Monument is very low.

Scientific Name	Common Name	G/S Rank
<i>Astragalus mollisimus</i> var. <i>marcidus</i>	Withered Woolly Loco	G5T2/S2 ¹
<i>Astragalus puniceus</i> var. <i>puniceus</i>	--	G4T3?Q/SR
<i>Eriogonum correllii</i>	Correll's Wild-Buckwheat	G3/S3
<i>Euphorbia strictior</i>	Tall Plains Spurge	G3/S3

G3T3 or rarer plant taxa known from Brewster County, Texas, but not yet reported from Big Bend National Park. Some of these taxa are of potential occurrence within the park, but others are not (see disclaimer in Appendix 1.) See Appendix 1 for a brief general discussion about rare plant taxa in Big Bend National Park.

Scientific Name	Common Name	G/S Rank
<i>Agalinis calycina</i>	Leoncita False-Foxglove	G1G3/SH
<i>Allolepis texana</i>	Texas False Saltgrass	G2/S1
<i>Argyrochosma limitanea</i> ssp. <i>mexicana</i>	A Fern	G4G5T3?S2
<i>Bouteloua kayi</i>	Kay's Grama	G1Q/S1
<i>Chamaesyce jejuna</i>	Dwarf Broomspurge	G2/S2
<i>Coryphantha scheeri</i> var. <i>scheeri</i>	Scheer's Pincushion Cactus	G4T3?/S2
<i>Cryptantha crassipes</i>	Terlingua Creek Cats-Eye	G1/S1
<i>Dalea bartonii</i>	Cox's Dalea	G1/S1
<i>Echinocereus chloranthus</i> var. <i>neocapillus</i>	Golden-Spine Hedgehog Cactus	G4T1/S1
<i>Echinocereus viridiflorus</i> var. <i>correllii</i>	Correll's Green Pitaya	G5T2/S2
<i>Echinocereus viridiflorus</i> var. <i>davisii</i>	Davis' Green Pitaya	G5T1/S1
<i>Emorya suaveolens</i>	Emorybush	G3/S1
<i>Eriogonum suffruticosum</i>	Bushy Wild-Buckwheat	G2/S2
<i>Escobaria hesteri</i>	Hester's Cory-Cactus	G2/S2
<i>Escobaria minima</i>	Nellie's Cory-Cactus	G1/S1
<i>Escobaria tuberculosa</i> var. <i>varicolor</i>	Thick-Spine Cory-Cactus	G4T3/S3
<i>Galium correllii</i>	Cliff Bedstraw	G2/S1
<i>Genistidium dumosum</i>	Brush Pea	G1/S1
<i>Hedeoma pilosum</i>	Old Blue Pennyroyal	GH/SH
<i>Hedyotis angulata</i>	Rock Bluet	G3/S3
<i>Hedyotis butterwickiae</i>	Butterwick's Bluets	G1/S1
<i>Hedyotis pooleana</i>	Jackie's Bluets	G1/S1
<i>Kallstroemia perennans</i>	Perennial Caltrop	G1/S1
<i>Lycium texanum</i>	Texas Wolfberry	G2/S2
<i>Machaeranthera blephariphylla</i>	White-Eye Goldenweed	G3/S2
<i>Matelea parviflora</i>	Smallflower Milkvine	G3/S3
<i>Matelea texensis</i>	Texas Milkvine	G1/S1
<i>Opuntia spinosibacca</i>	Spiny-Fruit Pricklypear	G2Q/S2
<i>Paronychia wilkinsonii</i>	Wilkinson's Nailwort	G2/S2
<i>Penstemon wrightii</i>	Wright's Penstemon	G3/S3
<i>Perityle bisetosa</i> var. <i>appressa</i>	Appressed Two-Bristle Rockdaisy	G2T2/S2
<i>Perityle bisetosa</i> var. <i>scalaris</i>	Stairstep Two-Bristle Rockdaisy	G2T1/S1
<i>Perityle rupestris</i> var. <i>albiflora</i>	Whiteflower Rock-Daisy	G4T3/S31
<i>Perityle rupestris</i> var. <i>rupestris</i>	Leafy Rock-Daisy	G4T3/S3
<i>Perityle vitreomontana</i>	Glass Mountains Rockdaisy	G1/S1
<i>Phacelia pallida</i>	Pale Phacelia	G2/S1
<i>Phyllanthus ericoides</i>	Heather Leaf-Flower	G2/S1
<i>Polygala maravillasensis</i>	Maravillas Milkwort	G2/S1
<i>Proboscidea spicata</i>	Manyflower Unicornplant	G1/S1
<i>Prunus murrayana</i>	Murray's Plum	G2/S2
<i>Rorippa ramosa</i>	Durango Yellow-Cress	G2/S1

All G3T3 taxa currently known from Culberson or Hudspeth counties are already reported from the park and are listed in previous sections of this document. Examination of available information yielded no other rare plant taxa of potential occurrence in Guadalupe Mountains National Park. In most cases reports from the park are the only reports for the two-county area. One species, Chihuahuan ringstem (*Anulocaulis leiosolenus* var. *lasianthus*, G4T3/S3), a gypsophile occurring in xeric lowland habitats, is not likely to be present within the park due to an absence of this type of habitat. Another species, Shining Coral-Root (*Hexalectris nitida*, G3/S3) is represented by a 1977 collection from Eddy County, New Mexico, but is not known to occur in Culberson County, Texas.

- **Lake Meredith National Recreation Area – Potentially Occurring Rare Plants**

G3T3 or rarer plant taxa that are of potential occurrence at Lake Meredith National Recreation Area. See Appendix 1 for information about each of these taxa.

Notes:

¹The sole specimen of this taxon from the Texas Panhandle may be misidentified; the likelihood of its occurrence at Lake Meredith National Recreation Area is very low.

Scientific Name	Common Name	G/S Rank
<i>Astragalus mollissimus</i> var. <i>marcidus</i>	Withered Woolly Loco	G5T2/S2 ¹
<i>Astragalus puniceus</i> var. <i>puniceus</i>	--	G4T3?Q/SR
<i>Eriogonum correllii</i>	Correll's Wild-Buckwheat	G3/S3
<i>Euphorbia strictior</i>	Tall Plains Spurge	G3/S3
<i>Heteranthera mexicana</i>	Mexican Mud-Plantain	G2/S2
<i>Solidago altiplanities</i>	High Plains Goldenrod	G3/S2

- **Lyndon B. Johnson National Historical Park – Potentially Occurring Rare Plants**

G3T3 or rarer plant taxa known from Gillespie and/or Blanco Counties which might be expected to occur at Lyndon B. Johnson National Historical Park. See Appendix 1 for further information about each of these taxa.

Scientific Name	Common Name	G/S Rank
<i>Agalinis densiflora</i>	Denseflower False-Foxglove	G3/S2
<i>Amorpha roemerana</i>	Texas Amorpha	G3/S3
<i>Argythamnia aphoroides</i>	Hill Country Wild-Mercury	G2/S2
<i>Brickellia dentata</i>	Gravelbar Brickellbush	G3/S3
<i>Brickellia eupatorioides</i> var. <i>gracillima</i>	Narrowleaf Brickellbush	G5T3/S3
<i>Carex edwardsiana</i>	Canyon Sedge	G3/S3
<i>Chaetopappa effusa</i>	Spreading Least-Daisy	G3/S3
<i>Clematis texensis</i>	Scarlet Leatherflower	G3/S3
<i>Eriogonum tenellum</i> var. <i>ramosissimum</i>	Basin Wild-Buckwheat	G5T3/S3
<i>Hexalectris nitida</i>	Glass Mountains Coral-Root	G3/S3
<i>Hexalectris warnockii</i>	Warnock's Coral-Root	G2/S2
<i>Indigofera miniata</i> var. <i>texana</i>	Texas Scarlet-Pea	G5T3/S3
<i>Lythrum ovalifolium</i>	Plateau Loosestrife	G3/S3

<i>Astrophytum asterias</i>	Star Cactus	G1/S1
<i>Atriplex wardii</i>	Ward's Saltbush	G3/S3
<i>Ayenia limitaris</i>	Texas Ayenia	G2/S1
<i>Callisia micrantha</i>	Littleflower Spiderwort	G3/S3
<i>Coryphantha macromeris</i>	Runyon's Cory-Cactus	G5T2/S2
<i>Cressa nudicaulis</i>	Leafless Alkali-Weed	G3/S2
<i>Cuscuta attenuata</i>	Marsh-Elder Dodder	G2/S2
<i>Echeandia chandleri</i>	Lila De Los Llanos	G3/S3
<i>Eleocharis austrotexana</i>	South Texas Spikesedge	G3/S3
<i>Glandularia polyantha</i>	Valley Vervain	G3/S2
<i>Grindelia oolepis</i>	Plains Gumweed	G2/S2
<i>Heteranthera mexicana</i>	Mexican Mud-Plantain	G3/S2
<i>Iva texensis</i>	Texas Sumpweed	G5T3Q/S3
<i>Justicia runyonii</i>	Runyon's Water-Willow	G2/S2
<i>Lenophyllum texanum</i>	Texas Stonecrop	G3/S3
<i>Manfreda longiflora</i>	Runyon's Huaco	G2/S2
<i>Manfreda sileri</i>	Siler's Manfreda	G3/S3
<i>Monarda citriodora</i> var. <i>parva</i>	Little Horsemint	G5T2/S2
<i>Nymphaea mexicana</i>	Yellow Water-Lily	G3G4/S1
<i>Selenia grandis</i>	Large Selenia	G3/S3
<i>Sporobolus tharpai</i>	Padre Island Dropseed	G3/S3
<i>Thelypodopsis shinneryi</i>	Shinnery's Rocket	G2/S2
<i>Tillandsia baileyi</i>	Bailey's Ballmoss	G2/S2
<i>Tradescantia buckleyi</i>	Buckley's Spiderwort	G3/S3
<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	--	G4T3/S2
<i>Willkommia texana</i>	Texas Willkommia	G3/S3

• **San Antonio Missions National Historical Park – Potentially Occurring Rare Plants**

G3T3 or rarer plant taxa known from Bexar County that have a remote chance of occurring at San Antonio Missions National Historical Park. See Appendix 1 for further information about each of these taxa.

Scientific Name	Common Name	G/S Rank
<i>Callisia micrantha</i>	Littleflower Spiderwort	G3/S3
<i>Celtis lindheimeri</i>	Lindheimer's Hackberry	G3Q/S3?
<i>Crataegus texana</i>	Texas Hawthorn	G3Q/S3
<i>Cuscuta exaltata</i>	Tree Dodder	G3/S3
<i>Desmanthus reticulatus</i>	Netleaf Bundleflower	G3/S3
<i>Physostegia correllii</i>	Correll's False-Dragonhead	G2/S1
<i>Prunus minutiflora</i>	Texas Almond	G3/S3
<i>Salvia penstemonoides</i>	Big Red Sage	G1G2/S1S2

ANIMALS – POTENTIALLY OCCURRING RARE ANIMALS

• **Alibates Flint Quarries National Monument – Potentially Occurring Rare Animals**

<i>Cycleptus elongatus</i>	Blue Sucker	G3/S3
<i>Euderma maculatum</i>	Spotted Bat	G4/S2 ¹
<i>Humboltiana chisosensis</i>	Chisos Mountains Threeband	G1/S1
<i>Hybognathus amarus</i>	Rio Grande Silvery Minnow	G1G2/SX
<i>Ictalurus lupus</i>	Headwater Catfish	G3/S2
<i>Ictalurus</i> sp.	Chihuahua Catfish	G1G2/S1S2
<i>Moxostoma austrinum</i>	West Mexican Redhorse	G3/S1
<i>Notropis jemezianus</i>	Rio Grande Shiner	G3/S3
<i>Notropis orca</i>	Phantom Shiner	GX/SX
<i>Notropis simus</i> *	Bluntnose Shiner	G2/SX
<i>Scaphirhynchus platyrhynchus</i>	Shovelnose Sturgeon	G4/S2 ²
<i>Trachemys gaigeae</i>	Big Bend Slider	G3/S2

• **Big Thicket National Preserve – Potentially Occurring Rare Animals**

Scientific Name	Common Name	G/S Rank
<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3/S3B
<i>Charadrius melodus</i>	Piping Plover	G3/S2
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-Eared Bat	G3G4/S3
<i>Cycleptus elongatus</i>	Blue Sucker	G3/S3
<i>Macrolemys temminckii</i>	Alligator Snapping Turtle	G3G4/S3
<i>Notropis hubbsi</i>	Bluehead Shiner	G3/S1
<i>Phylocentropus harrisi</i>	A Caddisfly	G1/S1
<i>Potamilus amphichaenus</i>	Texas Heelsplitter	G1/S1
<i>Somatochlora margarita</i>	Big Thicket Emerald Dragonfly	G2/S2

• **Fort Davis National Historic Site – Potentially Occurring Rare Animals**

No rare animals are expected to occur at Fort Davis National Historic Site.

• **Guadalupe Mountains National Park – Potentially Occurring Rare Animals**

Notes:

¹ Although this species is ranked G4, it is included here due to its former status as a candidate for listing as a federally endangered species.

Scientific Name	Common Name	G/S Rank
<i>Euderma maculatum</i>	Spotted Bat	G4/S2 ¹

• **Lake Meredith National Recreation Area – Potentially Occurring Rare Animals**

Scientific Name	Common Name	G/S Rank
<i>Charadrius alexandrinus</i>	Snowy Plover	G4/S2B
<i>Charadrius melodus</i>	Piping Plover	G3/S2
<i>Charadrius montanus</i>	Mountain Plover	G2/S2B
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	G4T4/S3?
<i>Vulpes velox</i>	Swift Fox	G3/S3?

Appendix 1. Discussion of globally rare plant species not documented as occurring, but potentially occurring on National Park Service areas in Texas, based on expert opinion.

- **Alibates Flint Quarries National Monument – Potentially Occurring Rare Plants**

Alibates Flint Quarries National Monument is surrounded by Lake Meredith National Recreation Area, and is located near an impounded stretch of the Canadian River north of Amarillo in northwestern Potter County. For purposes of a general review of known or potential biological resources, the two properties are considered singly in this report. See the discussion under Lake Meredith National Recreation Area for further discussion of the rare species potentially occurring on these parks.

- **Amistad National Recreation Area – Potentially Occurring Rare Plants**

Amistad National Recreation Area is located in Val Verde County, Texas. Approximately 32 G3T3 or rarer plant taxa are known from that county. Of particular interest are several G1/G2 taxa for which there are no post-1960 records: Wright's trumpets (*Acleisanthes wrightii*), Sabinal prairie-clover (*Dalea sabinalis*), Wright's justicia (*Justicia wrightii*) and Correll's false dragonhead. None of these 32 taxa is presently known to occur on property of the Amistad National Recreation Area. However, assuming certain successional conditions and the presence of a few microhabitats, most are of at least potential occurrence.

Detailed information about the flora of the Amistad region is limited. Searches for one listed endangered species, Tobusch fish-hook cactus (*Ancistrocactus tobuschii*) have been conducted with negative results (Jackie Poole, pers. comm.), but little information is available concerning the presence or absence of other G3T3 or rarer plant taxa. Poole (1995) provided a list of plant taxa observed at Lake Amistad Recreation Site, a 107-acre tract along the reservoir about 12 miles west of Del Rio. This property, leased by Laughlin Air Force Base from the U. S. Army Corps of Engineers, was examined six times during the 1993-1994 growing seasons, but no G3T3 or rarer plant taxa were encountered. Carr (1991) briefly examined a small tract on the northeast side of US Rt. 90, about 0.1-0.4 miles northwest of the bridge over Evans Creek, roughly 18 miles northwest of Del Rio. This shoreline property, also apparently administered by the U. S. Army Corps of Engineers, was visited for less than an hour on 28 February 1991. A large population of broadpod twistflower (*Streptanthus platycarpus*, G3/S3) and a small population of Texas almond (*Prunus minutiflora*, G3/S3) were encountered. Following are notes on plant taxa of conservation concern (G2/T2 or rarer) known from Val Verde County and of potential occurrence at Amistad National Recreation Area.

Acleisanthes crassifolia Gray. Texas trumpets. G2/S2. Global range: Texas and Coahuila. State range: Kinney, Maverick and Val Verde counties, usually among cenizo (*Leucophyllum frutescens*) and various thorny shrubs in shallow, well drained, calcareous gravelly loams over caliche (Poole, 1989; Smith; 1976). Known Texas populations occur over Austin Chalk or Uvalde Gravel. There are four recent reports of this species from Val Verde County: 0.2 miles south of Carruthers Draw on Hwy. 277 (occurrence 007); 11 miles east of Del Rio south of R. R. 2523 (occurrence 008), north side of R. R. 2523 ca. 3.8 miles from its junction with Hwy. 90-E (occurrence 009), and Laughlin Air Force Base (occurrence 010; see Carr, 1997).

Acleisanthes wrightii (Gray) Benth. & Hook. Wright's trumpets. G2/S2. Global range: Endemic to Texas. State range: Open semi-desert grasslands and shrublands on shallow stony soils over limestone on low hills and flats, with records from Pecos, Reeves, Terrell and Val Verde counties (Smith, 1976; Texas BCD, 1997). There are no recent reports of Wright's trumpets from Val Verde County. The only record might be considered historical: Limestone hill 2 miles southeast of Del Rio, 8 July 1958, D. S. Correll 19433 (TEX-LL).

Ancistrocactus tobuschii W. T. Marshall. *Echinocactus tobuschii* (W. T. Marshall) Weniger. Tobusch fishhook cactus. G2G3/S2S3. Global range: Essentially endemic to the Edwards Plateau of central Texas.

Kallstroemia perennans B. L. Turner. *Kallstroemia hirsuta* L. Williams; not *Kallstroemia hirsuta* (Benth.) Engler & Prantl. Perennial caltrop. G1/S1. Global range: Endemic to Texas. State range: Trans-Pecos and the semi-arid western edge of the Edwards Plateau, with records from Brewster, Presidio and Val Verde counties; usually in somewhat barren gypseous clays or limestone soils. There are two records of this species from Val Verde County: 3.5 mi W of Langtry, rocky calcareous hillside in somewhat pinkish soil, 1 May 1955, B. L. Turner 3779 (TEX-LL); 21 miles west of Comstock on Hwy 90, limestone hills along railroad tracks, 19 May 1974, J. M. Smith 77 (TEX-LL).

Pedimelum humile Rydberg. *Psoralea rydbergii* Cory. Rydberg's scurfpea. G1/S1. Global range: Near Piedras Negras, Coahuila and in southwest Texas (Grimes, 1990). State range: Known only from Val Verde County, in shortgrass grasslands and shrublands on xeric limestone uplands. In addition to historical specimens (occurrences 001, 002 and 004), there are four recent reports (occurrences 003, 005-007) of Rydberg's scurfpea from Texas. All are in Val Verde County, from just south of Del Rio to the Loma Alta area.

Perityle warnockii Powell. Warnock's rockdaisy. G1/S1. Global range: Known only from a few limestone cliff-faces in Val Verde County, Texas. The one collection from Val Verde County might be considered historical (although likely extant): In crevices and small pockets of solid limestone exposures of the Cretaceous Cap Rock of the Edwards Plateau, ca. 40-50 miles northeast of Dryden, E. B. Malone Ranch, northwest part, ca. 1 mile east of Pecos River, 15 September 1964, A. M. Powell 1311 (TEX-LL). This species has also been reported from a south-facing limestone cliff along Little Satan Canyon about 4.3-4.4 airmiles northwest of its mouth at Amistad Reservoir, or roughly 2-3 airmiles east of the Devils River arm of Amistad Reservoir (occurrence 002).

Physostegia correllii (Lundell) Shinnars. *Dracocephalum correllii* Lundell. Correll's false dragonhead. G2/S1. Global range: Louisiana and Texas south to Coahuila, Nuevo León and Sonora (Cantino, 1982). State range: Widely scattered across eastern and southern parts of Texas, with records from Bexar, Galveston, Montgomery, Travis, Val Verde and Zapata counties. Occurs in wet silty clay loams (Irving, 1980) on streambanks, in creekbeds, irrigation channels, and roadside drainage ditches. Correll's false-dragonhead was collected three times in the Del Rio area: along a small stream near the International Bridge at Del Rio, 26 June 1946, D. S. Correll 12890 (BRIT/SMU); along a ditch on RT. 277, 1 mile north of International Bridge to Acuna, 18 July 1957, D. S. Correll 18204 (TEX-LL); along an irrigation canal 2 miles south of Del Rio, 8 July 1958, D. S. Correll 19427 (TEX-LL).

Styrax texanus Cory. Texas snowbells. G1/S1. Global range: Endemic to the Edwards Plateau of Texas. State range: Edwards, Real, and Val Verde counties; introduced at a site in Kinney County. Limestone bluffs, boulder slopes, and cliff faces, usually along perennial streams in canyon bottoms, in full sun or in partial shade of evergreen-deciduous woodland (U. S. Fish & Wildlife Service, 1986). A population consisting of more than 100 plants was recently discovered at Dolan Falls Ranch along the Devils River in north-central Val Verde County. Somewhat unlikely to occur within Amistad National Recreation Area, although limestone shelves on north-facing cliffs might provide marginal habitat.

• Big Bend National Park – Potentially Occurring Rare Plants

The size, landscape, biological diversity, and doubtless the simple beauty of Big Bend National Park, in Brewster County, have attracted countless visits over the years by researchers in nearly all of the natural sciences. Time does not allow a review of the voluminous literature and unpublished field studies borne of these visits. However, much of the work on the park's rare plant species has already been abstracted and is available through Texas Conservation Data Center's Biological Conservation Database. Most of this research has been directed at federally-listed and other G1 and G2 taxa and, of course, the Cactaceae. Detailed information about G3 taxa, few of which have been subjected to intensive field survey, is in most cases more

counties, where it occurs in wet soils in herbaceous or graminoid dominated flatwoods ponds on the Deweyville, Beaumont, Montgomery and Bentley formations.

Cuscuta attenuata Waterfall. Marsh-elder dodder. G2/S2. Kansas, Oklahoma and Texas. State range: Cameron, Jackson, Liberty, Rains and Van Zandt counties; apparently parasitizes only *Iva annua* (Tyrl & Prather, 1990), thus usually found in silty clays or various loams on disturbed floodplains.

Eleocharis wolfii (Gray) Gray ex Britt. Wolf's spikesedge. G3/S1. Global range: Alberta and North Dakota east to Ohio, south to Mississippi and East Texas. State range: Known from a single collection from Jefferson County (Beaumont, 27 March 1944, R. L. Crockett 6642).

Helianthus occidentalis Riddell ssp. *plantagineus* (T. & G.) Shinnars. G5T3Q/S3. Global range: Mostly in southeast Texas, with reports from one county in Arkansas (Smith, 1988) and one parish in Louisiana (MacRoberts, 1989b). State range: Mostly in prairies on the coastal plain; in January 1998, TEX-LL had specimens from Austin, Bastrop, Caldwell, Colorado, Dewitt, Fayette, Jackson, Lavaca, Lee, Newton, Victoria, Waller and Washington counties.

Leitneria floridana Chapm. Corkwood. G3/S1. Global range: Scattered locations on the Coastal Plain: Southern Georgia and northern Florida, extreme southeast Missouri and northeast Arkansas, east-central Arkansas, and coastal southeast Texas (Bogle, 1977; Kral, 1983). State range: Brazoria, Chambers, Fort Bend and Jefferson counties, where it occurs in wet or saturated silty soils along brackish or fresh water swamps and thickets (Correll & Johnston, 1970).

Nymphaea mexicana Zucc. Yellow water-lily; banana water-lily. G3G4/S1. Global range: Mexico, Texas and southern Florida (Correll & Johnston, 1970); also Alabama, Arizona, California, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma and South Carolina, introduced in most inland sites (Wiersma, 1997). State range: Records from a few widely scattered counties (Cameron, Guadalupe, and Tyler counties were represented at TEX-LL in January 1998), but natural range uncertain.

Physostegia longisepala Cantino. Longsepal false dragonhead. G3S2. Global range: western Gulf Coastal Plain of Louisiana and East Texas. State range: Jasper, Hardin, Newton, Orange and Tyler counties; Singhurst (1996) added Jefferson County but provided no specimen citations or locational information. Originally found in moist acid loams in the fire-maintained transition zone between pine flatwoods and coastal prairies; now found primarily in secondary habitats such as wet borrow ditches along roadsides and moist areas in man-made clearings in pine forests (Gilmore & Smith, 1988).

Platanthera integra (Nutt.) Gray ex Beck. *Habenaria integra* (Nutt.) Spreng. G3G4/S1. Global range: New Jersey south to north-central Florida, west to southeast Texas; also in middle Tennessee (Orzell, 1990). State range: Currently known only from a few bog sites in a small area in Angelina and adjacent Jasper counties, with one historical collection presumed to be from Hardin County (Bridges & Orzell, 1989b; Orzell, 1990).

Scirpus etuberculatus (Steud.) O. Ktze. *Schoenoplectus etuberculatus* (Steud.) Sojak. Canby bulrush. G3G4S1. Global range: Rhode Island south to Florida, west to Missouri and Texas. State range: Flatwoods ponds in Hardin and Newton counties.

Several other G3T3 or rarer taxa with known occurrences in the seven-county area are considered unlikely to occur within Big Thicket National Preserve, but may still be of interest to Preserve staff. These include:

- Incised Groovebur (*Agrimonia incisa*): G2G3/S1S2
- Soxmans' Milkvetch (*Astragalus soxmaniorum*): G3/S3
- Goldenwave Tickseed (*Coreopsis intermedia*): G3S3
- Southern Lady's-Slipper (*Cypripedium kentuckiense*): G3/S1

<i>Crataegus turnerorum</i>	Turners' Hawthorn	G3?/S3?
<i>Draba standleyi</i>	Standley's Whitlow-Wort	G3/S1
<i>Echinocereus coccineus</i> var. <i>paucispinus</i>	Redflower Hedgehog Cactus	G5T3/S3
<i>Encelia scaposa</i>	One-Head Encelia	G3/S1
<i>Escobaria dasyacantha</i> var. <i>dasyacantha</i>	Dense Cory-Cactus	G3G5T3/S2
<i>Escobaria tuberosa</i> var. <i>varicolor</i>	Thick-Spine Cory-Cactus	G4T3/S3
<i>Gaura macrocarpa</i>	Trans-Pecos Butterfly-Weed	G3/S3
<i>Hackelia pinetorum</i> var. <i>pinetorum</i>	Livermore Stickseed	G3?T3?/S1
<i>Hedeoma molle</i>	Hairy False-Pennyroyal	G3/S3
<i>Heterotheca viscida</i>	Cliff Goldenaster	G3/S3
<i>Hexalectris warnockii</i>	Warnock's Coral-Root	G2/S2
<i>Leptochloa viscida</i>	Viscid Sprangletop	G3G4/S1
<i>Machaeranthera blephariphylla</i>	White-Eye Goldenweed	G3/S2
<i>Osmorhiza mexicana</i> ssp. <i>bipatriata</i>	Livermore Sweet Cicely	G4T1/S1
<i>Peniocereus greggii</i> var. <i>greggii</i>	Night-Blooming Cereus	G4T2/S2
<i>Penstemon cardinalis</i> ssp. <i>regalis</i>	Royal Red Penstemon	G3T2/S2
<i>Perityle quinqueflora</i>	Five-Flower Rock-Daisy	G3/S3
<i>Perityle rupestris</i> var. <i>albiflora</i>	Whiteflower Rock-Daisy	G4T3/S3
<i>Philadelphus crinitus</i>	Bearded Mockorange	G2/S1
<i>Polemonium pauciflorum</i> ssp. <i>hinckleyi</i>	Hinckley's Jacob's-Ladder	G3T2Q/S1
<i>Potamogeton clystocarpus</i>	Little Aguja Pondweed	G1/S1
<i>Proboscidea spicata</i>	Manyflower Unicornplant	G1/S1
<i>Prunus murrayana</i>	Murray's Plum	G2/S2
<i>Pseudoclapia watsonii</i>	Watson's Pseudoclapia	G1/S1
<i>Quercus depressipes</i>	Mexican Dwarf Oak	G2/S1
<i>Salvia arizonica</i>	Arizona Sage	G3G4/S2
<i>Selaginella viridissima</i>	Green Spikemoss	G2/S1
<i>Sicyos ampelophyllus</i>	Twining Bur-Cucumber	G3/S1
<i>Solanum davisense</i>	Davis Mountains Horse-Nettle	G3/S2
<i>Solanum leptosepalum</i>	Tigna Potato	G2/S1
<i>Stephanomeria wrightii</i>	Wright's Skeletonplant	G3/S2
<i>Talinum longipes</i>	Pink Flameflower	G3/S3
<i>Xylorhiza wrightii</i>	Wright's Machaeranthera	G3/S3
<i>Zanthoxylum parvum</i>	Shinners' Tickle-Tongue	G1/S1

- **Guadalupe Mountains National Park – Potentially Occurring Rare Plants**

Guadalupe Mountains National Park is located along the Texas-New Mexico Border in Culberson and Hudspeth counties, Texas. Various lists of the rare plant taxa of the park have been compiled on numerous occasions (Armstrong, 1996; Burgess & Northington, 1981; Heil & Brack, 1985; Higgins, 1989; Northington & Burgess, 1979; Riskind, 1974). The various opinions -- who thought what was rare -- were recently summarized by Poole (1998) in tabular form. A search of available data yielded no G3T3 or rarer plant taxa of potential occurrence in Guadalupe Mountains National Park, other than those species already documented.

- **Lake Meredith National Recreation Area – Potentially Occurring Rare Plants**

Lake Meredith National Recreation Area is located along an impounded stretch of the Canadian River north of Amarillo in northwestern Potter, southeastern Moore and southwestern Hutchinson counties. The national

Lyndon B. Johnson National Historical Park is located in Blanco County. The Texas Conservation Data Center is unaware of any botanical inventories that may have been conducted to date within the park, and therefore the TxCDC has no information regarding known occurrences of G3T3 or rarer plant taxa on the property. No plant taxa of federal concern have been reported from or are expected to occur within the monument.

A number of G3T3 or rarer plant taxa are known from Gillespie County and western Blanco County and could, hypothetically, be present within Lyndon B. Johnson National Historical Park. Several of these taxa are found on sand and gravel derived from igneous and metamorphic rocks of the Llano Uplift; since such substrates are absent from the park, their occurrence is quite unlikely. However, a few of the taxa, such as Texas scarlet-pea (*Indigofera miniata* var. *texana*) could potentially occur in sandy soils derived from the Hensell Sand formation which underlies the southern part of the monument. The other taxa show varying degrees of fidelity to substrates derived from limestone and could potentially occur on Glen Rose Limestone slopes in the northern part of the site. However, most of these taxa are generally found in areas with more deeply dissected terrain than that found at Lyndon B. Johnson National Historical Park. Following are notes on G3T3 or rarer plant taxa of potential occurrence at Lyndon B. Johnson National Historical Park.

Agalinis densiflora (Benth.) Blake. *Tomanthera densiflora* (Benth.) Penn.; *Gerardia densiflora* Benth. Denseflower false-foxglove. G3/S2. Global range: Central Kansas south through Oklahoma to central Texas (McGregor et al., 1977). State range: Known at least historically from Bell, Bexar, Blanco, Bosque, Comal, Dallas, Hays, Hood, Shackelford, Tarrant, and Wise counties (Pennell, 1921; TEX-LL, 1997), occurring in small numbers in grasslands on shallow, well drained, gravelly calcareous soils.

Amorpha roemerana Scheele. *Amorpha texana* Buckley. Texas amorpha. G3/S3. Global range: Endemic to the Edwards Plateau of Central Texas. State range: Bandera, Bexar, Comal, Gillespie, Hays, Kendall, Kerr, Medina, Travis and Uvalde counties, found in juniper-oak woodlands or shrublands on rocky limestone slopes, sometimes on dry shelves above creeks (Mahler, 1982; TEX-LL, 1995).

Argythamnia aphoroides Muell. Arg. Hill Country wild-mercury. G2/S2. Global range: Endemic to the Edwards Plateau of central Texas. State range: Blanco, Brown, Comal, Gillespie, Hays, Kendall, Kerr, Menard, Mills, Tom Green and Uvalde counties, occurring mostly in grasslands associated with plateau live oak (*Quercus fusiformis*) woodlands on limestone uplands (Mahler, 1981; Texas BCD, 1997).

Brickellia dentata (DC.) Sch. Bip. Gravelbar brickellbush. G3/S3. Global range: Endemic to Texas. State range: Bexar, Blanco, Comal, Edwards, Real, Travis, Uvalde, Val Verde and Williamson counties (TEX-LL, 1997), essentially restricted to frequently scoured gravelly alluvial beds in creek and river bottoms.

Brickellia eupatorioides (L.) Shinnery var. *gracillima* (Gray) Turner. *Kuhnia leptophylla* Scheele; *Brickellia leptophylla* (Scheele) Shinnery. Narrowleaf brickellbush. G5T3/S3. Global range: Endemic to Texas. State range: Mostly on the Edwards Plateau, with reports from Bexar, Blanco, Comal, Edwards, Gillespie, Kerr, Kimble, Kinney, Travis, Uvalde and Zavala counties, usually occurring in moist to dry gravelly alluvial soils along riverbanks but also on limestone slopes (Correll & Johnston, 1970).

Carex edwardsiana Bridges & Orzell. Canyon sedge. G3/S3. Global range: Endemic to Texas. State range: Mesic canyon woodlands or forests on the Edwards Plateau, with records from Bandera, Bexar, Blanco, Coryell, Medina, Kendall, Travis, and Uvalde counties (Bridges & Orzell, 1989; TEX-LL, 1998); often locally abundant, but only in mesic canyons.

Chaetopappa effusa (Gray) Shinnery. Spreading least-daisy. G3/S3. Global range: Endemic to Texas. State range: Southern Edwards Plateau, with records from Bandera, Bexar, Comal, Edwards, Gillespie, Kendall, Kerr, Medina, Real and Uvalde counties; a specimen from Travis County is probably erroneous as to location. Loamy soils in shade of oak-juniper woodlands on mesic rocky slopes or in limestone canyons.

Salvia penstemonoides Kunth & Bouché. Big red sage. G1/S1. Global range: Endemic to Texas. State range: Edwards Plateau, with records from Bandera, Bexar, Gillespie, Guadalupe, Kendall, Kerr, Real and Wilson counties; introduced into Travis County. Occurs in moist to seasonally wet clay or silt soils in creekbeds and on seepage slopes of limestone canyons, in full sun or partial shade.

Seymeria texana (Gray) Penn. Texas seymeria. G3/S3. Global range: Endemic to the Edwards Plateau of central Texas. State range: Bandera, Bexar, Comal, Gillespie, Hays, Kendall, Kerr, Kimble, Travis and Val Verde counties (Turner, 1982; TEX-LL, 1998), where it is found primarily in grassy openings in juniper-oak woodlands.

Styrax platanifolius Engelm. var. *platanifolius*. Sycamore-leaf snowbells. G3T3/S3. Global range: Endemic to Texas. State range: Mostly on eastern Edwards Plateau and adjacent Lampasas Cutplain, but also in Central Mineral Basin (Llano Uplift). Frisch (in ed.) cited specimens from Blanco, Burnet, Caldwell, Edwards, Kendall, Kerr, Kimble, Kinney, Llano, Real and Travis counties; also reported from Bexar, Comal, Gillespie, and Hays counties. Rare throughout range, usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture.

Tradescantia pedicellata Celerier. Granite spiderwort. G2/S2. Global range: Endemic to central Texas. State range: Restricted to grasslands and early successional open areas on sand and gravel derived from granite, gneiss and similar substrates in the Llano Uplift, with records from Blanco, Burnet, Llano and Mason counties (TEX-LL, 1998).

Valerianella texana Dyal. Llano corn-salad. G2/S2. Global range: Endemic to the Llano Uplift (Central Mineral Basin) of central Texas. State range: Burnet, Gillespie and Llano counties, occurring in shallow, well drained but seasonally moist gravelly soils derived from igneous or metamorphic rocks, often along the downslope margin of rock outcrops, in full sun or in partial shade of oak-juniper woodland.

• Padre Island National Seashore – Potentially Occurring Rare Plants

Padre Island National Seashore extends along the coastal barrier island in Kenedy and Kleberg counties. A number of G3T3 or rarer plant taxa from deep loose sands, lagunal shorelines, or freshwater wetlands on barrier islands or similar inland areas in Kenedy, Kleberg, and/or Nueces counties might be expected to occur within Padre Island National Seashore. None of these taxa is of federal or state concern. Discussion of these taxa follows.

Allium elmendorfii M. Ownbey. Elmendorf's onion. G2/S2. Global range: Endemic to Texas. State range: Atascosa, Bee, Bexar, Kenedy, Llano, Nueces, Refugio, San Patricio and Wilson counties, where it occurs in grasslands or other open habitats in deep loose sands.

Brazoria arenaria Lundell. Sand brazos-mint. G3/S3. Global range: Endemic to Texas. State range: Sandy areas in South Texas, with records from Aransas, Brooks, Hidalgo, Jim Hogg, Jim Wells, Kenedy, Kleberg, Refugio and San Patricio counties (Lundell, 1969; TEX-LL, 1998).

Callisia micrantha (Torr.) Hunt. *Tradescantia micrantha* Torr. Littleflower spiderwort. G3/S3. Global range: Endemic to Texas. State range: Lower Rio Grande Valley and South Texas Plains, where it often occurs in moist disturbed sites; in January 1998, TEX-LL had specimens from Bexar, Bee, Cameron, Dewitt, Hidalgo, Jim Wells, Kleberg, McMullen, Nueces, Refugio, San Patricio and Zapata counties.

Chaetopappa imberbis (Gray) Nesom. *Chaetopappa asteroides* (Nutt.) DC. var. *imberbis* Gray. Bristleless least-daisy. G3/S3. Global range: Endemic to sandy regions of southern and south-central Texas. State range: Atascosa, Aransas, Bexar, Caldwell, Goliad, Gonzales, Guadalupe, Kenedy, Nueces and Wilson

Paronychia lundellorum B. L. Turner. Lundells' nailwort. G1/S1. Global range: Endemic to South Texas. State range: Brooks, Kenedy and Kleberg counties, occurring on dune sands or in *Spartina* grasslands on low slightly saline sites (Turner, 1983).

Polanisia erosa (Nutt.) Iltis ssp. *breviglandulosa* Iltis. South Texas clammyweed. G5T3/S3. Global range: Endemic to Texas (Iltis, 1958). State range: South Texas Sand Sheet and Coastal Bend, with records from Aransas, Brooks, Hidalgo, Jim Hogg, Kenedy, Kleberg, Nueces, San Patricio, Starr, Willacy and Zapata counties, where it occurs in grasslands and early-successional open areas on deep loose sands.

Polygonum striatulum B. Robinson. *Polygonum camporum* Meisn. of some authors, misapplied (MacRoberts, 1989). Kleberg knotweed. G3/S3. Global range: Thought to be endemic to Texas (Correll & Johnston, 1970), but reported from Tammany Parish, Louisiana (MacRoberts, 1989) and Oklahoma (The Nature Conservancy, Central BCD, 1997). State range: Brooks, Kenedy, Kleberg, San Patricio and Starr counties, mostly in moist sandy prairies (Correll & Johnston, 1970; TEX-LL, 1998).

Prunus texana Dietr. *Prunus glandulosa* (Hook.) T. & G. Texas peachbush. G3/S3. Global range: Endemic to Texas. State range: Mostly in sandy areas of the South Texas Plains, post oak belt on Eocene sands of the Coastal Plain, and the Llano Uplift, with records from Aransas, Atascosa, Bastrop, Bexar, Brooks, Gonzales, Hidalgo, Kenedy, Kleberg, Llano, Mason, San Patricio, Starr, Victoria, and Wilson counties, occurring at scattered sites in various well drained sandy situations.

Rhododon angulatus (Tharp) B. L. Turner. *Stachydeoma angulata* Tharp; included within *Rhododon ciliatus* (Benth.) Epling in recent floras such as Correll & Johnston (1970) and Jones (1977). Tharp's rhododon. G1/S1. Global range: Endemic to the Coastal Bend of South Texas. State range: Aransas, Nueces (map in Turner, 1995), and Refugio (Jones, 1977) counties, known only from deep loose sand in sparsely vegetated areas on stabilized dunes of Pleistocene barrier islands.

Sesuvium trianthemoides Correll. Texas sea-purslane; roughseed sea-purslane. G1/S1. Global range: Apparently endemic to Texas. State range: Known only from the type collection taken in 1947 from "dunes" in an unspecified location in Kenedy County (Correll, 1966).

Sporobolus tharpianus Hitchcock. Padre Island dropseed. G3/S3. Global range: Endemic to coastal Texas. State range: Deep sandy soils of coastal dunes and the South Texas Sand Sheet, with records from Aransas, Brazoria, Cameron, Harris, Kenedy, San Patricio and Willacy counties (TEX-LL, 1998).

Vaseyochloa multinervosa Hitchcock. Texasgrass. G3/S3. Global range: Endemic to South Texas. State range: Grasslands and woodland margins on deep sandy soils of coastal South Texas, with records from Aransas, Atascosa, Bexar, Brooks, Kenedy, Kleberg, Nueces, San Patricio and Willacy counties.

Trichocoronis wrightii (T. & G.) Gray var. *wrightii*. G4T3/S2. Global range: California and southern Texas; also Tamaulipas and San Luis Potosí. State range: Aransas, Brooks, Cameron, Gonzales, Hidalgo, Karnes, Kleberg, Live Oak, Nueces, Refugio, San Patricio, Victoria, Willacy and Wilson counties (King & Robinson, 1970; TEX-LL, CCM, DUDLEY). Most records from Texas are historical, perhaps indicating a decline as a result of alteration of wetland habitats.

• Palo Alto Battlefield National Historic Site – Potentially Occurring Rare Plants

Palo Alto Battlefield National Historic Site is located in Cameron County, Texas. The Texas Conservation Data Center is unaware of any botanical inventories that may have been conducted to date within the park. Therefore no information regarding documented occurrences of G3T3 or rarer plant taxa on the property was examined. No plant taxa of federal concern have been reported to date from the site.

fairly high likelihood of occurrence within Palo Alto Battlefield National Historic Site, depending on edaphic conditions and land use history.

Eleocharis austrotexana M. C. Johnston. South Texas spikesedge. G3/S3. Global range: Endemic to Texas. State range: occurring in miscellaneous wetlands at scattered locations on the coastal plain, with records from Atascosa, Cameron, Guadalupe, Kenedy, Kleberg, Matagorda, San Patricio and Wharton counties (Johnston, 1964; TEX-LL, 1997).

Glandularia polyantha Umber. *Verbena delticola* of some authors, misapplied; see Umber, 1979. Valley vervain. G3/S2. Global range: South Texas and Tamaulipas (Umber, 1979). State range: Restricted to Cameron and perhaps other counties in the Lower Rio Grande Valley.

Grindelia oolepis Blake. Plains gumweed. G2/S2. Global range: Endemic to the Gulf Coastal Plain of South Texas. State range: Bee, Cameron, Jim Wells, Nueces, Refugio and San Patricio counties, found in early successional patches in coastal prairie on heavy clay soils, sometimes in disturbed habitats along railroads and vacant lots in urban areas (Mahler, 1980; Mahler, 1981); collected by Robert Runyon from "crawfish lands" in Cameron County in 1923.

Heteranthera mexicana Wats. *Eurystemon mexicanum* (Wats.) Alex. Mexican mud-plantain. G3/S2. Global range: Coahuila, Nuevo León and Tamaulipas north to South Texas; disjunct on the Texas Panhandle. State range: Of bimodal distribution, known from resacas and other wet areas in Cameron, Hidalgo and Nueces counties in South Texas and from the margins of playa lakes in Hockley, Swisher and an unspecified county (east of Amarillo, 27 Jul 1927, B. C. Tharp 4316) on the Texas Panhandle. Few recent collections from either part of the state.

Iva texensis Jackson. *Iva angustifolia* Nutt. var. *latior* Shinnars. Texas sumpweed. G5T3Q/S3. Global range: southern coastal Texas; almost surely in adjacent Tamaulipas, but not so reported by Correll & Johnston (1970). State range: Mostly on dunes, semi-stabilized sand and clay flats along beaches and in sacahuista grasslands, near the Gulf coast. In January 1997, TEX-LL had specimens from Atascosa, Brooks, Cameron, Kenedy, Kleberg, Nueces and Willacy counties; Shinnars (1964) mentioned its occurrence in Goliad County. Field research is likely to indicate that this species is much more common than current collections indicate. It probably should not be considered a species of conservation concern.

Justicia runyonii Small. Runyon's water-willow. G2/S2. Global range: South Texas and Tamaulipas. State range: Cameron and Hidalgo counties; also reported from Brazoria and Goliad counties, but these records may be questionable. Mostly in openings in subtropical woodlands on calcareous silts and clays of the Rio Grande delta (Poole, 1989).

Lenophyllum texanum (J. G. Smith) Rose. *Sedum texanum* J. G. Smith. Texas stonecrop. G3/S3. Global range: Southern Coastal Plain of Texas and adjacent Tamaulipas. State range: Brooks, Cameron, Kleberg, Nueces, and Webb counties, occurring in shrublands on clay dunes (lomas) at the mouth of the Rio Grande and on xeric calcareous rock outcrops at scattered inland sites (Turner, 1983). This species is locally frequent on and around lomas at the mouth of the Rio Grande and elsewhere in eastern Cameron County.

Selenia grandis R. Martin. Large selenia. G3/S3. Global range: Endemic to South Texas. State range: Dimmit, Cameron, Hidalgo, McMullen and Nueces counties (Martin, 1940; TEX-LL, 1998), occurring in seasonally wet clayey soils in open areas.

Thelypodopsis shinnarsii (M. C. Johnston) Rollins. *Sisymbrium shinnarsii* M. C. Johnston; *Thelypodium shinnarsii* (M. C. Johnston) Rollins. Shinnars' rocket. G2/S2. Global range: Lower Rio Grande Valley

Cuscuta exaltata Engelm. Tree dodder, oak dodder. G3S3. Global range: Texas and Florida. State range: Scattered across the eastern half of the state, with records from Aransas, Bell, Bexar, Comal, Dallas, Hays, Kendall, Kerr, Llano, McLennan, San Patricio, Travis, Uvalde and Val Verde counties (TEX-LL, 1998; Yuncker, 1966); parasitic on various *Quercus*, *Juglans*, *Rhus*, *Vitis*, *Ulmus*, and *Diospyros* species (Yuncker, 1966) as well as *Acacia berlandieri* and other woody plants.

Desmanthus reticulatus Benth. Nettleleaf bundleflower. G3S3. Global range: Endemic to Texas. State range: Mostly on clay prairies of the coastal plain of central and south Texas, with reports from Bexar, Comal, Gonzales, Kerr, Kleberg, Live Oak, San Patricio, Travis, Uvalde and Wilson counties (Luckow, 1993; Turner, 1959; TEX-LL).

Physostegia correllii (Lundell) Shinn. *Dracocephalum correllii* Lundell. Correll's false dragonhead. G2S1. Global range: Louisiana and Texas south to Coahuila, Nuevo León and Sonora (Cantino, 1982). State range: Widely scattered across eastern and southern parts of Texas, with records from Bexar, Galveston, Montgomery, Travis, Val Verde and Zapata counties. Occurs in wet silty clay loams (Irving, 1980) on streamsides, in creekbeds, irrigation channels, and roadside drainage ditches.

Prunus minutiflora Engelm. Texas almond. G3S3. Global range: Texas and Chihuahua (Vines, 1960). State range: Edwards Plateau, Llano Uplift, and South Texas Plains, with records from Bexar, Bell, Burnet, Comal, Edwards, Frio, Irion, Kimble, Kinney, Live Oak, Mason, McMullen, Medina, Real, Travis, Uvalde, Val Verde, Williamson and Zavala counties (Wilkinson, 1977; TEX-LL, 1997); wide-ranging but scarce, in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone but occasionally in sandier neutral soils underlain by granite.

Salvia penstemonoides Kunth & Bouché. Big red sage. G1S1. Global range: Endemic to Texas. State range: Edwards Plateau, with records from Bandera, Bexar, Gillespie, Guadalupe, Kendall, Kerr, Real and Wilson counties; introduced into Travis County. Occurs in moist to seasonally wet clay or silt soils in creekbeds and on seepage slopes of limestone canyons, in full sun or partial shade.

portion of the Devils River (G. Garrett, TPWD, pers. com.). Peden (1973) described *Gambusia amistadensis* (GX/SX) from Goodenough Spring, which was inundated by Lake Amistad, and the species is now extinct. Although captive stocks were maintained for a period, they were compromised by genetic introgression from the congeneric *Gambusia affinis*. An apparently undescribed species of *Gambusia* also occurs in Val Verde County, and when mapped its range may include areas within the NPS border along the Devils River (G. Garrett, TPWD, pers. com.)

The headwater catfish (*Ictalurus lupus*, G3/S2) has been confirmed in the last decade from both the lower Pecos and lower Devils River (Kelsch and Hendricks, 1990) but not from Lake Amistad proper. This species is morphologically very similar to the widespread and frequently introduced channel catfish (*Ictalurus punctatus*), but it is known principally from clear, spring-fed systems. The Chihuahua catfish (*Ictalurus* sp., G1G1/S1S2) is an undescribed form being investigated. Its occurrence in the Amistad National Recreation Area is doubted (G. Garrett, TPWD, pers. com.)

The two rare reptiles considered for the recreation area, the spot-tailed earless lizard (*Holbrookia lacerata*, G3G4/S3?) and the Devils River blackheaded snake (*Tantilla rubra diabolus*, G4/S2), are poorly known. The lizard is recorded from Val Verde County (Raun and Gehlbach, 1972) but neither a specific locality nor a museum collection number were available to TXCDC staff in preparation of this report. This lizard occurs in a patchy distribution across southwestern Texas (Dixon, 1987) and its specific habitat requirements or population densities are poorly defined. It may occur on the recreation area but it is unconfirmed. The type locality for the Devils River blackheaded snake is upstream from the lake in the vicinity of Dolan Falls. Originally described as a full species (*Tantilla diabolus*) by Fouquette and Potter (1961), it is currently considered a subspecies of the Big Bend blackheaded snake, *Tantilla rubra*, by Smith and Werler (1969). Its subspecific designation is questioned (J. Dixon, TAMU, pers. com.) as being one of the two color morphs of the species (Hillis and Campbell, 1982). The species is also known from Big Bend National Park (see above), the Davis Mountains, Elephant Mountain, the Cuesta del Burro Mountains in Presidio County and the area around Langtry. This snake is probably more common and widespread in the southern Trans-Pecos than records indicate but it is furtive, has a very narrow seasonal surface activity period, and is not often encountered. Since the collection of the type specimen, only a single additional specimen has been collected from the Devils River drainage (Treadwell and Hibbitts, 1969).

Big Bend Sliders (*Trachemys gaigeae*, G3/S2) are endemic to the Rio Grande in the Big Bend Region from Presidio and Hudspeth Counties (Raun and Gehlbach, 1972; Dixon, 1987) downstream to at least Terrell County (J. Dixon, TAMU, pers. com.) Thus their occurrence in the recreation area is possible, either through transport into the reservoir by floods or naturally occurring in the riverine portion of the area. The impact of impoundment on this species is unknown.

It is unknown to TXCDC staff whether or not an inventory of black-capped vireo (*Vireo atricapillus*, G2/S2B) habitat or population status has been conducted on the recreation area. Shrub woodlands in limestone canyons surrounding the park probably contain breeding pairs of these birds during the nesting season. It is likely that they are relatively common if not numerous. This federally endangered bird is an abundant nester in suitable habitat in the Devils River corridor, and is inventoried annually on the Dolan Falls Ranch Preserve (TNC) and the Devils River State Natural Area (TPWD) to the north (W. Connally, TNC, pers. com., K. Bryan, TPWD, pers. com.). The metapopulation of breeding black-capped vireos occurs across this portion of the western Edwards Plateau (Grzybowski, 1991) and extends into similar scrub/oak woodlands on limestone bluffs and arroyos into adjacent Coahuila, Mexico. Although this species is experiencing a decline in nesting habitats and populations over its formerly large breeding range (extending across western Oklahoma into south-central Kansas), the western Edwards Plateau contains the largest area of relatively contiguous nesting habitat and consequently, holds the highest number of remaining breeding vireo pairs.

which are presumed extinct in the Rio Grande (Bestgen and Platania, 1990; Hubbs, *et al.*, 1991), although the subspecies *Notropis simus pecosensis* persists in the Pecos River in central New Mexico. The bluntnose shiner has not been confirmed in the Rio Grande since 1964, nor has the phantom shiner been collected since 1975. The Rio Grande shiner, *Notropis jemezianus* (G3/S3), was formerly widely distributed throughout the Rio Grande Basin (Hubbs, *op cit.*) but it is declining precipitously and is patchy in distribution with remnant populations. Recent confirmations in the mainstem of the Rio Grande within the last decade include downstream from Maravillas Canyon to Lozier Canyon, Santa Elena Canyon and scattered locations below Amistad Dam, and in the Pecos River system in Independence Creek (G. Garrett, TPWD staff, pers. com.) An additional cyprinid species is the Mexican stoneroller (*Camptostoma ornatum*, G3/S1), currently known primarily from sites above Big Bend National Park, in Rio Grande reaches just below Redford and just below Presidio. This species is widely distributed but declining across northern Mexico. The stoneroller was the most common fish in Tornillo Creek in 1954 (Hubbs and Wauer, 1973) but by the late 1960's was purportedly reduced by competition from introduced killifish (*Fundulus zebrinus*). Declining water availability in the Rio Grande is another threat attributed to the taxon's local decline. The Rio Grande silvery minnow (*Hybognathus amarus*, G1G2/SX) also is presumed extinct in Texas and is currently at the center of a conservation/water use allocation controversy in central New Mexico, where greatly reduced populations survive.

Two species of catostomids (sucker family) warrant conservation attention: the west Mexican redhorse (*Moxostoma austrinum*, G3/S1) and the blue sucker (*Cycleptus elongatus*, G3/S3). The redhorse is known only from Alamito Creek (Hubbs *et al.* 1991), upstream from Big Bend and may occur in the park, although it has not been confirmed. It does occur in western Mexico in Pacific drainages, but its conservation status is not available. The blue sucker is widely distributed in large rivers from the Mississippi Basin to the Rio Grande, but it is known to be in limited populations in the southern portion of its range and no data are available on its status in the Rio Grande of Big Bend or elsewhere.

The headwater catfish (*Ictalurus lupus*, G3/S2) and an undescribed species of catfish (*Ictalurus* sp., G1G2/S1S2), known as the Chihuahua catfish, are undocumented from the Rio Grande or its perennial tributaries in the vicinity of the park. However, the currently known range of the headwater catfish and the purported distribution of the Chihuahua catfish encompass the Rio Grande Basin from New Mexico downstream beyond Amistad Reservoir (Hubbs *et al.* 1991). Thus, there is some potential for their occurrence within the park. A recently published account of a distributional survey for the headwater catfish does not include confirmations for Big Bend National Park, nor are there any museum specimens from previous collections (Kelsch and Hendricks, 1990.) And Garrett (in lit.) stated that this species was present in three segments of the Rio Grande, although he did not provide specific locations.

Lastly among the fishes is an intriguing possibility of a sturgeon (listed in the table as the shovelnose sturgeon, *Scaphirhynchus platyrhynchus*, G4/S2) that was reported by recreational anglers from the Lower Canyons of the Rio Grande, below Big Bend National Park (G. Garrett, TPWD staff, pers. com.) Although this is an unconfirmed sighting, it warrants attention because few other fish species could be confused with a sturgeon, even by recreational anglers. Also, there are historic records (represented by two specimens) of this species from the Rio Grande at Albuquerque, NM from the middle 1870's (Hubbs. *et al.* 1991). Shortly after this observation was brought to light in the early 1990's, ichthyologists embarked on an unsuccessful expedition of electroshocking and netting to investigate. Even the genus is at question, although the shovelnose sturgeon is most likely since it does occur in Texas in the Red River below Dennison Dam. The other possibility is the genus *Acipenser* (R. Edwards, UTPA, pers. com.) but only confirmation of the sturgeon's presence will determine this. It is not far-fetched that some species of sturgeon occupies the Rio Grande, although sturgeons are catadromous, returning to marine environments to spawn. The presence of Amistad and Falcón dams provides effective barriers that preclude completion of this migration cycle. If sturgeons are present in the Rio Grande, they must be either very old individuals or perhaps be able to spawn in Lake Amistad, which does get an augmented dissolved salt content from the Pecos River. Until there is some confirmation of a sturgeon's occurrence, these discussions are highly speculative and purely academic.

definition of full and valid species, based on the comments of Ned Strenth (ASU, pers. com.) who questions the nomenclatural validity of several species of *Humboldtiana* described as southwestern mountain endemics. Pratt (1971) described an additional endemic species, *Humboldtiana agavophila* (no rank), as occurring in oak/juniper woodlands at Laguna Meadow. The species was usually associated with the bases of senescent agaves (*Agave* spp.). Wauer (1980) summarized the molluscan literature of Big Bend National Park and listed endemic species of *Humboldtiana*, including *Humboldtiana chisosensis*, *Humboldtiana agavophila*, *Humboldtiana edithae* (no rank, limited to Emory Peak) and a fourth, as yet undescribed *Humboldtiana* species (with no rank) from the Sue Peaks area of the Dead Horse Mountains. This issue requires further examination of the literature, begs the need for contemporary molecular and biochemical techniques to understand the systematics of poorly known groups, and points out a requirement for more thorough and punctual zoogeographic inventories.

Wauer (*op cit.*) also summarized records of three additional genera of mollusks that have been described with populations limited to the Big Bend region within or adjacent to the park. These include *Streptaxis cheatumi* (no rank) from Casa Grande Peak, *Holospiras riograndensis* (no rank) from the Mesa de Anguila, *Holospiras yucatanicus* (no rank) from the area around Rio Grande Village southward into adjacent Coahuila, and two endemic subspecies of *Polygyra*.

- **Big Thicket National Preserve – Potentially Occurring and Documented Rare Animals**

This large preserve consists of several distinct units scattered over portions of northern Jefferson, western Orange, western Jasper, southern Hardin, extreme northern Liberty, southeastern Polk, and southern Tyler counties.

The federally endangered red-cockaded woodpecker (*Picoides borealis*, G3/S2B) is known from several small populations, some of which are documented by EORs. Its patchy distribution results from fragmentation of suitable and sufficient habitat stands across its range. The species, listed as a rare to uncommon local resident in pinelands (Texas Bird Records Committee, 1995), is the subject of contemporary research into its ecology, particularly its dependence upon a fire-adapted woodland system (Engstrom and Sanders, 1997; Shackelford and Conner, 1997; Conner, *et al.*, 1997; see references cited therein). The Bachman's sparrow (*Aimophila aestivalis*, G3/S3B) is another pine woodland endemic found across the southeastern U.S. It may also depend upon fire to maintain open grassland beneath a pine canopy. It may be declining because of forest fragmentation and altered seral stages of pine maturation (Conner and Dickson, 1997). There are no EORs for this species on the Preserve, although there are several knowledgeable ornithologists who could accurately map this species' distribution in Texas to include Big Thicket National Preserve.

The piping plover (*Charadrius melodus*, G3/S2) is included here because of its potential occurrence in coastal or estuarine units of the Big Thicket National Preserve.

Rafinesque's big-eared bat, (*Corynorhinus rafinesquii*, G3G4/S3) is patchily distributed throughout the pineywoods (Schmidly, 1991) and is currently being researched (M. Horner, TPWD; pers. com.). It depends upon mature pine forests, and information on habitat utilization (Lance and Garrett, 1997), maternity roost site selection, and hibernation vs. migration is under investigation.

The alligator snapping turtle (*Macrolemys temminckii*, G3G4/S3) depends upon slow-moving streams, oxbow lakes, and similar relatively undisturbed areas of suitable habitat. Big Thicket National Preserve is likely to provide such habitat. The species is elusive, although individuals can grow to a large size, and it is infrequently encountered. Its conservation status and population sizes should be investigated to determine population viability, distribution, and interconnectedness.

including ponderosa pine woodlands (Watkins, *op cit.*), to lower elevation desert scrub (see Big Bend National Park account above). Its occurrence in the park is to be expected, given the species' predilection for ragged, rocky canyons and nearby, high and steep cliff faces for roosting sites (Easterla, 1973) and the fact that the range of specific known habitats exists within the park. Additional reason to suspect that it occurs and probably will be confirmed in Guadalupe Mountains National Park is the fact that spotted bats are known from breeding populations to both the north and south. It breeds in Big Bend National Park to the south (Easterla, *op cit.*) and was recently reported from a mixed coniferous forest in the Sacramento Mountains in central New Mexico to the north (Perry, *et al.* 1997). This species is a strong flier, and may be either seasonally migratory or capable of hibernation as all records of this bat are from the warm season (Schmidly, 1991).

A single rare insect, the Texas minute moss beetle (*Limnebius texanus*), is known from Guadalupe Mountains National Park (F. Armstrong, NPS staff, pers. com.) and is mentioned here because its ranking status is GH/SH, indicating that it has been historically recorded within the park but not recently confirmed.

- **Lake Meredith National Recreation Area – Potentially Occurring and Documented Rare Animals**

Lake Meredith National Recreation Area is located along an impounded stretch of the Canadian River north of Amarillo in northwestern Potter, southeastern Moore and southwestern Hutchinson counties. The area surrounds Alibates Flint Quarries National Monument, in Potter County. For purposes of a general review of known or potential biological resources, the two properties are considered in this report as a single unit.

Several contemporary sightings of Snowy Plover (*Charadrius alexandrinus*) are known, but few are very recent according to Amarillo birder Ken Seyffert (pers. com.). The G4/S4B ranked species is discussed here due to its former candidate status for listing under the federal endangered species act. There is no appropriate habitat for the Mountain Plover (*Charadrius montanus*, G2/S2B) in this park; it requires short-grass prairie for nesting and uses plowed fields for foraging, particularly during winter and migration. However, the migration route of the Mountain Plover is through the portion of the Panhandle including Lake Meredith National Recreation Area.

- **Lyndon B. Johnson National Historical Park – Potentially Occurring and Documented Rare Animals**

Lyndon B. Johnson National Historical Park is in Blanco County. Only the Guadalupe bass (*Micropterus treculi*, G3/S3) is known from the park (indicated by one EOR), denoting a riverine habitat is present. Current population status or habitat conditions are unknown. Other rare animals are not expected on the park.

- **Padre Island National Seashore – Potentially Occurring and Documented Rare Animals**

Padre Island National Seashore covers a barrier island ecosystem and associated marine and estuarine zones in Kenedy and Kleberg Counties. Marine mammals are not listed in this report but several porpoises and baleen whales (14 species) occur off the coast. Most are migratory and occurrences along the coast are most often recorded as lethal strandings of individuals. The national seashore boundary only extends to the 2 fathom depth and most marine mammals are pelagic.

An individual black-capped vireo (*Vireo atricapillus*, G2/S2B) was recorded recently at a banding station. It should be regarded as a very uncommon migrant between its breeding habitat along the Balcones Escarpment and Edwards Plateau in central Texas and its wintering grounds in southwestern Mexico.

The ocelot, two species of salamanders, two snakes and a lizard have not been confirmed on the site but their occurrence is considered possible. Specifically, the ocelot (*Felis pardalis*, G3/S1) is more likely transient than resident, but the proximity of nearby populations or other tracts of suitable, contiguous, sufficient habitat is not known, so there is at least some potential for this cat to occur there. The blackheaded snake, (*Tantilla atriceps*, G3/S1), is secretive, tiny, and easily confused with sympatric and more common congeners. The spot-tailed lizard (*Holbrookia lacerata*, G3G4/S3?) occurs in nearby counties, and is rarely sought or encountered. Its patchy distribution across its range is sparsely represented in museum collections (Dixon, 1987) and habitat details are vague. The black-striped snake (*Coniophanes imperialis*, G3/S2) is at the extreme northern edge of its primarily Neotropical distribution, and its habitat requirements are poorly known and may not include natural communities occurring on the park. A systematic herpetofaunal inventory is needed, particularly in light of surrounding habitat fragmentation.

Other species of conservation concern include two grassland birds, the aplomado falcon (*Falco femoralis*, G4/S1) and Botteri's sparrow (*Aimophila botterii*, G4/S4B). The falcon is being re-established nearby at the Laguna Atascosa National Wildlife Refuge and a single sighting adjacent to the national park was made in 1992 (unpublished NPS report on natural resources in TNC files). Botteri's sparrow occurs in grasslands of the park, and is part of the south Texas population at the northeastern extreme of its distribution (NPS report cited above). Another coastal prairie bird of potential occurrence is the white-tailed hawk, a pair of which was recently recorded in adjacent woodlands edging open grasslands (NPS report cited above).

Two mammals deserve mention here, including the southern yellow bat (*Lasiurus ega*,) and the Coues' rice rat (*Oryzomys couesi aquaticus*, G5T3?/S2). The bat, at the northeastern limit of its range, is known only from a few records from Nueces County south, and although primarily Neotropical, it may be expanding its range and populations in southern Texas (Schmidly, 1991). The rice rat is also Neotropical and its Texas distribution is limited to the southern coast (Schmidt and Engstrom, 1994). It is a former candidate for listing under the federal endangered species act.

- **San Antonio Missions National Historical Park – Potentially Occurring and Documented Rare Animals**

San Antonio Missions National Historical Park consists of four small urban to semi-urban units in San Antonio and southern Bexar County, and one recent addition to the park located in rural Wilson County. This addition, formerly mission ranch land, was not considered in preparation of this report due to a lack of available information on its exact location and size; further inventory of that unit of the park may be warranted. No rare species are known from this complex of parts. Perhaps some rare migratory bird species periodically occur within or over the park. The TXCDC is not aware of any data that are available, or of any natural resource inventory that has been done.

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Abbreviations of Institutions Cited in Personal Communications: ASU - Angelo State University; TAMU - Texas A&M Univ.; TAMK - Texas A&M Kingsville (formerly Texas A&I Univ.); TPWD - Texas Parks & Wildlife Department; UTPA - Univ. TX Pan American; TNC - The Nature Conservancy; PINS - Padre Island National Seashore; NPS - National Park Service