

AJO PEAK TO TINAJAS ALTAS: A FLORA OF SOUTHWESTERN ARIZONA PART 2. THE CHECKLIST

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ABSTRACT

A checklist is provided for the modern and fossil vascular plant flora of the contiguous protected areas of Organ Pipe Cactus National Monument, Cabeza Prieta National Wildlife Refuge, and the Tinajas Altas Region in southwestern Arizona. The modern flora includes 741 native and non-native taxa. The fossil record includes more than 219 species documented by specimens recovered from packrat (*Neotoma* spp.) middens spanning the last 43,000+ years. An additional checklist is provided for the approximately 135 taxa restricted to higher-elevation mountains in Organ Pipe Cactus NM. This article is the second contribution for our flora of southwestern Arizona.

KEY WORDS: Sonoran Desert, vascular plant flora, Arizona, Organ Pipe Cactus National Monument, Cabeza Prieta National Wildlife Refuge, Tinajas Altas, deep history, non-native species, desert sky islands

This article provides a checklist for the vascular plant flora of the three contiguous protected areas of Organ Pipe Cactus National Monument, Cabeza Prieta National Wildlife Refuge, and the Tinajas Altas Region in southwestern Arizona—the heart of the Sonoran Desert (Figure 1). These three entities encompass 514,242 hectares (1,270,700 acres), approximately 5141 km² (1985 mi²). This listing includes the modern flora documented by botanists as well as the fossil record based on specimens collected and curated by packrats (*Neotoma* sp.). The modern flora includes at least 741

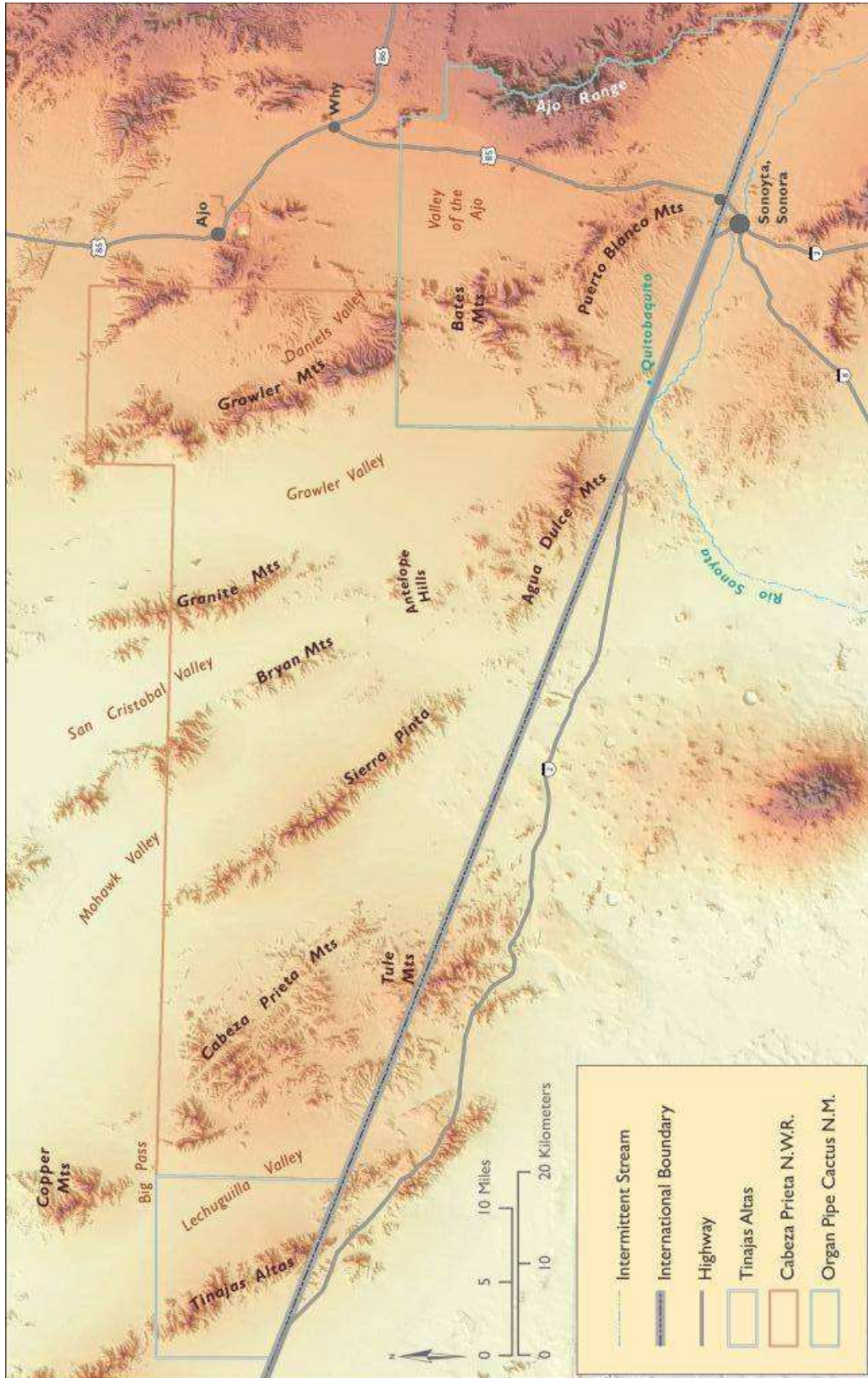


Figure 1. Map of the flora area in southwestern Arizona. Map created by Ami Pate of Organ Pipe Cactus National Monument.

native and non-native taxa and is specimen-based. The fossil record includes more than 219 species documented by specimens recovered from packrat (*Neotoma* spp.) middens spanning the last 43,000+ years (43,000 ybp to modern times). Van Devender sampled and studied numerous middens across the flora area at 240–975 m (787–3200 ft) elevation (see Felger et al. 2012a, 2013). Following the full checklist of the three protected areas is a checklist of approximately 135 taxa restricted to the Ajo Mountains and other higher mountains in Organ Pipe, most of which are essentially desert sky island populations.

Synonyms are provided and cross-indexed only for taxonomic changes not shown in the more detailed checklist of the modern flora of the area published in Canotia (Felger et al. 2012b), and additional taxonomic updates can be expected in forthcoming floristic treatments of our flora. Family designations follow APG III. Non-native plants established as reproducing populations in the flora area are indicated with an asterisk (*) and non-native species not established as reproducing populations are marked with two asterisks (**). Present-day taxa also known from the fossil record are indicated with a dagger symbol (†), and those no longer present in the flora area are indicated with two daggers (††). Some fossils not identifiable to species are shown with dagger symbols and a question mark (††?); these include ones identifiable only to genus, or a species group, or one of two species, and may be the same as modern taxa or ones no longer present in the flora area. These same symbols will be used throughout forthcoming contributions to our flora of the three protected areas in southwestern Arizona. The individual taxonomic complexities including the fossil specimens will be discussed and interpreted in the species accounts in forthcoming contributions.

This article is the second contribution for our flora in southwestern Arizona (Felger et al. 2013). The first article in this series includes maps and brief descriptions of the physical, biological, ecologic, floristic, and deep history makeup of the flora area. Considerable additional background information can be found in web sites for Organ Pipe and Cabeza Prieta, e.g., Organ Pipe Cactus National Monument (2011) and Slone (2011). This flora will be published in segments in forthcoming articles in *Phytoneuron* and will also be posted open access on the website of the University of Arizona Herbarium (ARIZ).

**MODERN AND FOSSIL TAXA IN ORGAN PIPE CACTUS NATIONAL MONUMENT,
CABEZA PRIETA NATIONAL WILDLIFE REFUGE,
AND THE TINAJAS ALTAS REGION**

PTERIDOPHYTES

MARSILEACEAE

Marsilea vestita Hooker & Greville

PTERIDACEAE

Argyrochosma limitanea (Maxon) Windham subsp. *limitanea*

Astrolepis cochisensis (Goodding) D.M. Benham & Windham

Astrolepis sinuata (Lagasca ex Swartz) D.M. Benham & Windham subsp. *sinuata*

Bommeria hispida (Mettenius ex Kuhn) Underwood

Cheilanthes lindheimeri Hooker

Cheilanthes parryi (D.C. Eaton) Domin

Cheilanthes villosa Davenport ex Maxon

Cheilanthes wrightii Hooker

Cheilanthes yavapensis T. Reeves ex Windham

Notholaena californica D.C. Eaton subsp. *californica*

Notholaena standleyi Maxon

Pellaea truncata Goodding

Pentagramma triangularis (Kaulfuss) Yatskievych et al. var. *maxonii* (Weatherby) Yatskievych et al.

LYCOPODS

SELAGINELLACEAE

†*Selaginella arizonica* Maxon

Selaginella eremophila Maxon

GYMNOSPERMS

CUPRESSACEAE

Juniperus arizonica R.P. Adams

††*Juniperus californica* Carrière

††*Juniperus* cf. *osteosperma* (Torrey) Little

††*Juniperus scopulorum* Sargent

EPHEDRACEAE

†*Ephedra aspera* Engelmann ex S. Watson

[*E. fasciculata* A. Nelson]

PINACEAE

††*Pinus edulis* Engelmann var. *fallax* Little

MAGNOLIIDS

ARISTOLOCHIACEAE

Aristolochia watsonii Wootton & Standley

SAURURACEAE

Anemopsis californica (Nuttall) Hooker & Arnott

EUDICOTS

ACANTHACEAE

Anisacanthus thurberi (Torrey) A. Gray

Carlowrightia arizonica A. Gray

Dicliptera resupinata (Vahl) de Jussieu

Justicia californica (Bentham) D.N. Gibson

†*Justicia candicans* (Nees) L.D. Benson

Justicia longii Hilsenbeck

Ruellia nudiflora (Engelmann & A. Gray) Urban

ADOXACEAE

***Sambucus cerulea* Rafinesque

AIZOACEAE

**Mesembryanthemum crystallinum* Linnaeus

**Mesembryanthemum nodiflorum* Linnaeus

Trianthema portulacastrum Linnaeus

AMARANTHACEAE (includes Chenopodiaceae)

- **Amaranthus albus* Linnaeus
- Amaranthus crassipes* Schlechtendahl var. *crassipes*
- †*Amaranthus fimbriatus* (Torrey) Bentham ex S. Watson
- †*Amaranthus palmeri* S. Watson
- Amaranthus ×tucsonensis* Henrickson
- ††? *Amaranthus* sp./spp.
- †*Atriplex canescens* (Pursh) Nuttall subsp. *canescens*
- ††*Atriplex confertifolia* (Torrey & Frémont) S. Watson
- †*Atriplex elegans* (Moquin-Tandon) D. Dietrich
- Atriplex lentiformis* (Torrey) S. Watson subsp. *lentiformis*
- Atriplex linearis* S. Watson
- Atriplex pacifica* A. Nelson
- †*Atriplex polycarpa* (Torrey) S. Watson
- ***Bassia hyssopifolia* (Pallas) Kuntze
- **Chenopodium murale* Linnaeus
- Chenopodium watsonii* A. Nelson
- ††? *Froelichia* sp.
- Gomphrena sonora* Torrey
- Monolepis nuttalliana* (Schultes) Greene
- Nitrophila occidentalis* (Moquin-Tandon) S. Watson
- **Salsola tragus* Linnaeus
- Suaeda nigra* (Rafinesque) J.F. Macbride
- Tidestromia lanuginosa* (Nuttall) Standley subsp. *eliassoniana* Sánchez-del Pino & Flores Olvera

ANACARDIACEAE

- †*Rhus aromatica* Aiton var. *trilobata* (Nuttall) A. Gray ex S. Watson
- ††*Rhus* cf. *aromatica*
- Rhus kearneyi* F.A. Barkley subsp. *kearneyi*

APIACEAE

- Bowlesia incana* Ruiz & Pavón
- †*Daucus pusillus* Michaux
- Eryngium nasturtiifolium* de Jussieu ex F. Delaroché
- Lomatium nevadensis* (S. Watson) Coulter & Rose
- Spermolepis lateriflora* G.L. Nesom
- [*S. echinata* (Nuttall) A. Heller, in part]
- Yabea microcarpa* (Hooker & Arnott) Koso-Poljanski

APOCYNACEAE (includes Asclepiadaceae)

- †*Asclepias albicans* S. Watson
- Asclepias erosa* Torrey
- Asclepias linaria* Cavanilles
- Asclepias nyctaginifolia* A. Gray
- Asclepias subulata* Decaisne
- Funastrum hartwegii* (Vail) Schlechter
- Haplophyton cimidum* A. de Candolle
- Matelea cordifolia* Woodson
- Matelea parvifolia* (Torrey) Woodson
- Metastelma arizonicum* A. Gray

ASTERACEAE

- Acamptopappus sphaerocephalus* (Harvey & A. Gray) A. Gray var. *sphaerocephalus*
Acourtia nana (A. Gray) Reveal & R.M. King
Acourtia wrightii (A. Gray) Reveal & R.M. King
Adenophyllum porophylloides (A. Gray) Strother
Ageratina paupercula (A. Gray) R.M. King & H. Robinson
Ambrosia ambrosioides (Cavanilles) W.W. Payne
†*Ambrosia confertiflora* de Candolle
Ambrosia cordifolia (A. Gray) W.W. Payne
†*Ambrosia deltoidea* (Torrey) W.W. Payne
†*Ambrosia dumosa* (A. Gray) W.W. Payne
Ambrosia dumosa × *A. ilicifolia*
†*Ambrosia ilicifolia* (A. Gray) W.W. Payne
Ambrosia monogyra (Torrey & A. Gray ex A. Gray) Strother & B.G. Baldwin
†*Ambrosia salsola* (Torrey & A. Gray) Strother & B.G. Baldwin var. *pentalepis* (Rydberg) Strother & B.G. Baldwin
Arida arizonica, *see* *Leucosyris arida*
Arida carnosa, *see* *Leucosyris carnosa*
Artemisia dracunculus Linnaeus
†*Artemisia ludoviciana* Nuttall subsp. *albula* (Wooton) D.D. Keck
††*Artemisia tridentata* Nuttall complex
Baccharis brachyphylla A. Gray
Baccharis salicifolia (Ruiz & Pavón) Persoon
Baccharis sarothroides A. Gray
†*Bahiopsis parishii* (Greene) E.E. Schilling & Panero
Baileya multiradiata Harvey & A. Gray
Baileya pleniradiata Harvey & A. Gray
†*Bebbia juncea* (Bentham) Greene var. *aspera* Greene
†*Brickellia atractyloides* A. Gray var. *atractyloides*
Brickellia californica (Torrey & A. Gray) A. Gray
†*Brickellia coulteri* A. Gray var. *coulteri*
Brickellia frutescens A. Gray
††? *Brickellia* sp.
††*Calycoseris parryi* A. Gray
Calycoseris wrightii A. Gray
***Carthamus tinctorius* Linnaeus
**Centaurea melitensis* Linnaeus
†*Chaenactis carphoclinia* A. Gray var. *carphoclinia*
†*Chaenactis stevioides* Hooker & Arnott
††*Chrysothamnus teretifolius* (Durand & Hilgard) H.M. Hall
††? *Chrysothamnus* sp.
†*Cirsium neomexicanum* A Gray
Diaperia verna (Rafinesque) Morefield var. *verna*
Dietera asteroides Torrey var. *glandulosa* (B.L. Turner) D.R. Morgan & R.L. Hartman
Eclipta prostrata (Linnaeus) Linnaeus
†*Encelia farinosa* A. Gray ex Torrey
Encelia farinosa × *E. frutescens*
Encelia frutescens (A. Gray) A. Gray
†*Ericameria cuneata* (A. Gray) McClatchie var. *spathulata* (A. Gray) H.M. Hall
†*Ericameria laricifolia* (A. Gray) Shinnars
**Erigeron canadensis* Linnaeus

Erigeron lobatus A. Nelson
Eriophyllum lanosum (A. Gray) A. Gray
Gaillardia arizonica A. Gray
Gamochaeta stagnalis (I.M. Johnston) Anderberg
†*Geraea canescens* Torrey & A. Gray
Gutierrezia arizonica (A. Gray) M.A. Lane
†*Gutierrezia sarothrae* (Pursh) Britton & Rusby
†*Gymnosperma glutinosum* (Sprengel) Lessing
***Helianthus annuus* Linnaeus
Helianthus niveus (Bentham) Brandegee subsp. *tephrodes* (A. Gray) Heiser
††? *Heterotheca* sp.
Hymenothrix wislizenii A. Gray
Hymenoxys odorata de Candolle
Isocoma acradenia (Greene) Greene var. *acradenia*
Koanophyllum palmeri (A. Gray) R.M. King & H. Robinson
**Lactuca serriola* Linnaeus
Laennecia coulteri (A. Gray) G.L. Nesom
Leucosyris arida (B.L. Turner & D.B. Horne) Pruski & R.L. Hartman
 [*Arida arizonica* (R.C. Jackson & R.R. Johnson) D.R. Morgan & R.L. Hartman]
Leucosyris carnososa (A. Gray) Greene
 [*Arida carnososa* (A. Gray) D.R. Morgan & R.L. Hartman]
Logfia arizonica (A. Gray) Holub
Logfia depressa (A. Gray) Holub
Logfia filaginoides (Hooker & Arnott) Morefield
Machaeranthera tagetina Greene
Malacothrix fendleri A. Gray
Malacothrix glabrata (A. Gray ex D.C. Eaton) A. Gray
Malacothrix sonora W.S. Davis & P.H. Raven
Monoptilon bellioides (A. Gray) H.M. Hall
**Oncosiphon piluliferum* (Linnaeus f.) Källersjö
Packera quercetorum (Greene) C. Jeffrey
Palafoxia arida B.L. Turner & M.I. Morris var. *arida*
Parthenice mollis A. Gray
Pectis cylindrica (Fernald) Rydberg
Pectis linifolia Linnaeus var. *linifolia*
Pectis papposa Harvey & A. Gray var. *papposa*
Perityle ajoensis T.K. Todsen
†*Perityle emoryi* Torrey
††? *Perityle* sp.
†*Peucephyllum schottii* A. Gray
Pleurocoronis laphamioides (Rose) R.M. King & H. Robinson
Pleurocoronis pluriseta (A. Gray) R.M. King & H. Robinson
†? *Pleurocoronis* sp.
Pluchea odorata (Linnaeus) Cassini var. *odorata*
†*Porophyllum gracile* Bentham
Prenanthes exigua (A. Gray) Rydberg
Psathyrotes ramosissima (Torrey) A. Gray
Pseudognaphalium canescens (de Candolle) Anderberg
Psilostrophe cooperi (A. Gray) Greene
Rafinesquia californica Nuttall
†*Rafinesquia neomexicana* A. Gray

Senecio flaccidus Lessing var. *monoensis* (Greene) B.L. Turner & T.M. Barkley
Senecio lemmonii A. Gray
Senecio mohavensis A. Gray
 **Sonchus asper* (Linnaeus) Hill subsp. *asper*
 **Sonchus oleraceus* Linnaeus
Stephanomeria exigua Nuttall subsp. *exigua*
Stephanomeria pauciflora (Torrey) Nelson
Stephanomeria schottii (A. Gray) A. Gray
Stylocline gnaphaloides Nuttall
Stylocline micropoides A. Gray
Tessaria sericea (Nuttall) Shinnery
 [*Pluchea sericea* (Nuttall) Coville]
 †*Thymophylla concinna* (A. Gray) Strother
Thymophylla pentachaeta (de Candolle) Small var. *belenidium* (de Candolle) Strother
Townsendia annua Beaman
Trichoptilium incisum (A. Gray) A. Gray
 †*Trixis californica* Kellogg var. *californica*
Uropappus lindleyi (de Candolle) Nuttall
 ***Verbesina encelioides* (Cavanilles) Benth. f. & Hooker ex A. Gray
Xanthisma gracile (Nuttall) D.R. Morgan & R.L. Hartman
 †*Xanthisma spinulosus* (Pursh) D.R. Morgan & R.L. Hartman var. *gooddingii* (A. Nelson) D.R.
 Morgan & R.L. Hartman
Zinnia acerosa (de Candolle) A. Gray

BERBERIDACEAE

†*Berberis haematocarpa* Wootton
Berberis harrisoniana Kearney & Peebles
 ††? *Berberis* sp.

BIGNONIACEAE

Chilopsis linearis (Cavanilles) Sweet subsp. *arcuata* (Fosberg) Henrickson

BORAGINACEAE (includes Hydrophyllaceae)

†*Amsinckia intermedia* Fischer & C.E. Meyer
 †*Amsinckia tessellata* A. Gray var. *tessellata*
Cryptantha angustifolia, see *Johnstonella angustifolia*
 †*Cryptantha barbiger* (A. Gray) Greene
Cryptantha ganderi I.M. Johnston
Cryptantha holoptera, see *Johnstonella holoptera*
 †*Cryptantha maritima* (Greene) Greene
Cryptantha micrantha, see *Eremocarya micrantha*
 †*Cryptantha pterocarya* (Torrey) Greene var. *cycloptera* (Greene) J.F. Macbride
Cryptantha racemosa, see *Johnstonella racemosa*
 ††*Cryptantha utahensis* (A. Gray) Greene
Eremocarya micrantha (Torrey) Greene subsp. *micrantha*
 [*Cryptantha micrantha* (Torrey) I.M. Johnston var. *micrantha*]
Eucrypta chrysanthemifolia (Benth.) Greene var. *bipinnatifida* (Torrey) Constance
Eucrypta micrantha (Torrey) A. Heller
Harpogonella palmeri A. Gray
Heliotropium curassavicum Linnaeus

Johstonella angustifolia (Torrey) Hasenstab & M.G. Simpson
 [Crypstantha angustifolia (Torrey) Greene]
Johnstonella holoptera (A. Gray) Hasenstab & M.G. Simpson
 [Crypstantha holoptera (A. Gray) J.F. Macbride]
 †*Johstonella racemosa* (S. Watson ex A. Gray) Hasenstab & M.G. Simpson
 [Crypstantha racemosa (S. Watson ex A. Gray) Greene]
 †*Lappula redowskii* (Hornemann) Greene var. *cupulata* (A. Gray) M.E. Jones
Nama demissum A. Gray var. *demissum*
Nama hispidum A. Gray var. *spathulata* (Torrey) C.L. Hitchcock
 †*Pectocarya heterocarpa* (I.M. Johnston) I.M. Johnston
 †*Pectocarya platycarpa* (Munz & I.M. Johnston) Munz & I.M. Johnston
Pectocarya recurvata I.M. Johnston
Phacelia affinis A. Gray
Phacelia bombycina Wooton & Standley
Phacelia coerulea Greene
 †*Phacelia crenulata* Torrey ex S. Watson var. *ambigua* (M.E. Jones) J.F. McBride
Phacelia distans Bentham
Phacelia neglecta M.E. Jones
Phacelia pedicellata A. Gray
Phacelia ramosissima Douglas ex Lehmann
Phacelia rotundifolia Torrey ex S. Watson
 ††?Phacelia sp.
Pholistima auritum (Lindley) Lilja ex Lindblom var. *arizonicum* (M.E. Jones) Constance
 †*Plagiobothrys arizonicus* (A. Gray) Greene ex A. Gray
Plagiobothrys jonesii A. Gray
Tiquilia canescens (A. de Candolle) A.T. Richardson var. *canescens*
Tiquilia palmeri (A. Gray) T.A. Richardson

BRASSICACEAE

††*Athysanus pusillus* (Hooker) Greene
Boechera perennans (S. Watson) W.A. Weber
 ***Brassica nigra* (Linnaeus) W.D.J. Koch
 **Brassica tournefortii* Gouan
 ***Capsella bursa-pastoris* (Linnaeus) Medikus
Caulanthus lasiophyllus (Hooker & Arnott) Payson
 †*Descurainia pinnata* (Walter) Britton
Dimorphocarpa pinnatifida Rollins
Dithyrea californica Harvey
Draba cuneifolia Nuttall ex Torrey & A. Gray
 †*Draba* cf. *cuneifolia*
 **Eruca vesicaria* (Linnaeus) Cavanilles subsp. *sativa* (Miller) Thellung
Erysimum capitatum (Douglas ex Hooker) Greene
Hesperidanthus linearifolius (A. Gray) Rydberg
Lepidium densiflorum Schrader
 †*Lepidium lasiocarpum* Nuttall ex Torrey & A. Gray
Lepidium thurberi Wooton
 ††?*Lepidium* sp./spp.
Lyrocarpa coulteri Hooker & Harvey
 ***Matthiola longipetala* (Ventenat) de Candolle
 ***Nasturtium officinale* W.T. Aiton
Physaria tenella (A. Nelson) O'Kane & Al-Shehbaz

Sibara angelorum (S. Watson) Greene
Sibara virginica (Linnaeus) Rollins
 ***Sisymbrium altissimum* Linnaeus
 **Sisymbrium irio* Linnaeus
 ***Sisymbrium orientale* Linnaeus
Streptanthella longirostris (S. Watson) Rydberg
Streptanthus carinatus C. Wright ex A. Gray subsp. *arizonicus* (S. Watson) Kruckenberg, Rodman, & Worthington
Thelypodium wrightii A. Gray
 ***Thlaspi arvense* Linnaeus
 †*Thysanocarpus curvipes* Hooker

BURSERACEAE

†*Bursera microphylla* A. Gray

CACTACEAE

†*Carnegiea gigantea* (Engelmann) Britton & Rose
 ††*Coryphantha vivipera* (Nuttall) Britton & Rose
 †*Cylindropuntia acanthocarpa* (Engelmann & J.M. Bigelow) F.M. Knuth
Cylindropuntia acanthocarpa var. *coloradensis* (L.D. Benson) Pinkava
Cylindropuntia acanthocarpa var. *major* (Engelmann & J.M. Bigelow) Pinkava
Cylindropuntia acanthocarpa × *C. spinosior*
Cylindropuntia arbuscula (Engelmann) F.M. Knuth
 †*Cylindropuntia bigelovii* (Engelmann) F.M. Knuth
Cylindropuntia echinocarpa (Engelmann & J.M. Bigelow) F.M. Knuth
 †*Cylindropuntia* cf. *fulgida* (Engelmann) F.M. Knuth
Cylindropuntia fulgida var. *fulgida*
Cylindropuntia fulgida var. *mamillata* (Schott ex Engelmann) Backeberg
 †*Cylindropuntia leptocaulis* (de Candolle) F.M. Knuth
 †*Cylindropuntia ramosissima* (Engelmann) F.M. Knuth
Cylindropuntia spinosior (Engelmann) F.M. Knuth
Cylindropuntia versicolor (Engelmann ex J.M. Coulter) F.M. Knuth
 ††*Cylindropuntia* cf. *whipplei* (Engelmann & J.M. Bigelow) F.M. Knuth
 †*Echinocactus polycephalus* Engelmann & J.M. Bigelow
Echinocactus polycephalus var. *polycephalus*
Echinocereus engelmannii (Parry ex Engelmann) Lemaire var. *acicularis* L.D. Benson
Echinocereus engelmannii var. *chrysocentrus* (Engelmann & J.M. Bigelow) Rümpler
Echinocereus nicholii (L.D. Benson) B.D. Parfitt
Echinocereus santaritensis W. Blum & Rutow
 †?*Echinocereus* sp./spp.
Echinomastus erectocentrus (J.M. Coulter) Britton & Rose var. *acunensis* (W.T. Marshall) Bravo
 †*Ferocactus cylindraceus* (Engelmann) Orcutt
 †*Ferocactus emoryi* (Engelmann) Orcutt
 †*Ferocactus wislizeni* (Engelmann) Britton & Rose
Grusonia kunzei (Rose) Pinkava
 [G. *parishii* (Orcutt) Pinkava, misapplied to *G. kunzei* in the flora area. D. Pinkava and M. Baker, pers. com. 2013]
Grusonia wrightiana (E.M. Baxter) E.M. Baxter, Calif. Cactaceae 58, 1935.
 [*Opuntia wrightiana* Baxter, Cactus & Succ. Jour. 4: 283, 1932. *O. wrightiana* (E.M. Baxter) Peebles, Desert Plant Life 9: 45, 1937. *G. kunzei* (Rose) Pinkava, misapplied to *G. wrightii* in the flora area. D. Pinkava and M. Baker, pers. com. 2013]

Grusonia wrightiana E.M. Baxter,
Lophocereus schottii (Engelmann) Britton & Rose var. *schottii*
Mammillaria grahamii Engelmann subsp. *grahamii*
 †*Mammillaria* cf. *grahamii*
Mammillaria tetrancistra Engelmann
Mammillaria thornberi Orcutt
 †?*Mammillaria* sp.
 †*Opuntia basilaris* Engelmann & J.M. Bigelow
Opuntia basilaris var. *basilaris*
 †*Opuntia chlorotica* Engelmann & J.M. Bigelow
Opuntia engelmannii Salm-Dyck ex Engelmann var. *engelmannii*
Opuntia engelmannii var. *flavispina* (L.D. Benson) B.D. Parfitt & Pinkava
 ***Opuntia engelmannii* var. *linguiformis* (Griffiths) B.D. Parfitt & Pinkava
 †*Opuntia engelmannii* and/or *O. phaeacantha*
Opuntia phaeacantha Engelmann
 ***Opuntia santa-rita* (Griffiths & Hare) Rose
Peniocereus greggii (Engelmann) Britton & Rose var. *transmontanus* (Engelmann) Backeberg
Peniocereus striatus (Brandege) Buxbaum
 †*Stenocereus thurberi* (Engelmann) Buxbaum

CAMPANULACEAE

Nemacladus orientalis (McVaugh) Morin
Triodanis biflora (Ruiz & Pavón) Greene

CANNABACEAE

†*Celtis pallida* Torrey subsp. *pallida*
 †*Celtis reticulata* Torrey

CAPPARACEAE

Atamisquea emarginata Miers ex Hooker & Arnott

CAPRIFOLIACEAE

††*Symphoricarpos* sp.

CARYOPHYLLACEAE

Achyronychia cooperi Torrey & A. Gray
Cerastium texanum Britton
Drymaria viscosa S. Watson
 ***Herniaria hirsuta* Linnaeus var. *cinerea* (de Candolle) Loret & Barrandon
Loeflingia squarrosa Nuttall
Silene antirrhina Linnaeus

CHENOPODIACEAE, see AMARANTHACEAE

CLEOMACEAE

Polanisia dodecandra (Linnaeus) de Candolle subsp. *trachysperma* (Torrey & A. Gray) H.H. Iltis
Wislizenia refracta Engelmann subsp. *refracta*

CONVOLVULACEAE

Cuscuta californica Hooker & Arnott var. *californica*
Cuscuta legitima Costea & Stefanović

Cuscuta salina Engelman var. *salina*
Cuscuta tuberculata Brandegee
Cuscuta umbellata Kunth var. *umbellata*
Evolvulus alsinoides Linnaeus
Ipomoea costellata Torrey
Ipomoea cristulata Hallier
Ipomoea hederacea Jacquin
††? *Ipomoea* sp.
Jacquemontia pringlei A. Gray

CRASSULACEAE

Crassula connata (Ruiz & Pavón) Berger
Dudleya arizonica Rose
Graptopetalum rusbyi (Greene) Rose

CROSSOSOMATACEAE

† *Crossosoma bigelovii* S. Watson

CUCURBITACEAE

Brandegea bigelovii (S. Watson) Cogniaux
Cucurbita digitata A. Gray
Cucurbita palmata S. Watson
Echinopepon wrightii (A. Gray) S. Watson
Marah gilensis (Greene) Greene
Tumamoca macdougalii Rose

EUPHORBIACEAE

Acalypha californica Bentham
† *Croton sonorae* Torrey
Croton wigginsii L.C. Wheeler
Ditaxis adenophora (A. Gray) Pax & K. Hoffmann
Ditaxis brandegeei (Millspaugh) Rose & Standley var. *intonsa* I.M. Johnston
† *Ditaxis lanceolata* (Bentham) Pax & K. Hoffmann
† *Ditaxis neomexicana* (Müller Argoviensis) A. Heller
Ditaxis serrata (Torrey) A. Heller var. *serrata*
††? *Ditaxis* sp.
Euphorbia abramsiana L.C. Wheeler
Euphorbia albomarginata Torrey & A. Gray
Euphorbia arizonica Engelman
Euphorbia capitellata Engelman
Euphorbia eriantha Bentham
Euphorbia florida Engelman
Euphorbia heterophylla Linnaeus
† *Euphorbia hyssopifolia* Linnaeus
† *Euphorbia melanadenia* Torrey
Euphorbia micromera Boissier ex Engelman
† *Euphorbia micromera* and/or *E. polycarpa*
Euphorbia pediculifera Engelman var. *pediculifera*
Euphorbia polycarpa Bentham
**Euphorbia prostrata* Aiton
Euphorbia setiloba Engelman ex Torrey

Euphorbia spathulata Lamarck
Euphorbia trachysperma Engelm
 ††? *Euphorbia* spp. (Chamaesyce)
 † *Jatropha cardiophylla* (Torrey) Müller Argoviensis
Jatropha cinerea (Ortega) Müller Argoviensis
 † *Jatropha cuneata* Wiggins & Rollins
 † *Sebastiania bilocularis* S. Watson
Stillingia linearifolia S. Watson
 † *Tragia nepetifolia* Cavanilles

FABACEAE

Acaciella angustissima (Miller) Britton & Rose
Acmispon brachycarpus (Benth) D.D. Sokoloff
Acmispon maritimus (Nuttall) D.D. Sokoloff var. *brevivexillus* (Ottley) Brouillet
 † *Acmispon rigidus* (Benth) Brouillet
Acmispon strigosus (Nuttall) Brouillet
 ††? *Acmispon* sp./spp.
Astragalus didymocarpus Hooker & Arnott var. *dispermus* (A. Gray) M.E. Jones
Astragalus insularis Kellogg var. *harwoodii* Munz & McBurney
Astragalus lentiginosus Douglas ex Hooker var. *australis* Barneby
Astragalus lentiginosus var. *yuccanus* M.E. Jones
 † *Astragalus nuttallianus* de Candolle
Astragalus nuttallianus cf. var. *imperfectus* (Rydberg) Barneby
 ††? *Astragalus* sp.
Calliandra eriophylla Benth
 † *Coursetia glandulosa* A. Gray
 † *Dalea mollis* Benth
Dalea pogonathera A. Gray var. *pogonathera*
Dalea pringlei A. Gray var. *pringlei*
Desmodium procumbens (Miller) Hitchcock
Galactia wrightii A. Gray
Hoffmannseggia glauca (Ortega) Eifort
Lupinus arizonicus (S. Watson) S. Watson
Lupinus concinnus J. Agardh
Lupinus sparsiflorus Benth
 ††? *Lupinus* sp./spp.
 † *Marina parryi* (Torrey & A. Gray) Barneby
 ***Medicago polymorpha* Linnaeus
 **Melilotus indicus* (Linnaeus) Allioni
Mimosa distachya Cavanilles var. *laxiflora* (Benth) Barneby
Nissolia schottii (Torrey) A. Gray
 † *Olneya tesota* A. Gray
 ***Parkinsonia aculeata* Linnaeus
 † *Parkinsonia florida* (Benth ex A. Gray) S. Watson
 † *Parkinsonia microphylla* Torrey
Phaseolus acutifolius A. Gray var. *acutifolius*
Phaseolus filiformis A. Gray
Prosopis glandulosa Torrey var. *torreyana* (L.D. Benson) M.C. Johnston
 † *Prosopis glandulosa* and/or *P. velutina*
Prosopis pubescens Benth
Prosopis velutina Wooton

Psorothamnus emoryi (A. Gray) Rydberg var. *emoryi*
Psorothamnus fremontii (Torrey ex A. Gray) Barneby
Psorothamnus spinosus (A. Gray) Barneby
Rhynchosia texana Torrey & A. Gray
†*Senegalia greggii* (A. Gray) Britton & Rose
†*Senna covesii* (A. Gray) H.S. Irwin & Barneby
Tephrosia vicioides Schlechtendal
Trifolium wormskioldii Lehmann
†*Vachellia constricta* (Bentham) Seigler & Ebinger
Vicia ludoviciana Nuttall ex Torrey & A. Gray var. *ludoviciana*

FAGACEAE

†*Quercus turbinella* Greene

FOUQUIERIACEAE

†*Fouquieria splendens* Engelman subsp. *splendens*

GENTIANACEAE

Eustoma exaltatum (Linnaeus) Salisbury ex G. Don subsp. *exaltatum*
Zeltnera arizonica (A. Gray) G. Mansion

GERANIACEAE

**Erodium cicutarium* (Linnaeus) L'Héritier ex Aiton
†*Erodium texanum* A. Gray
Geranium carolinianum Linnaeus

GROSSULARIACEAE

Ribes quercetorum Greene

HYDROPHYLLACEAE, see BORAGINACEAE

KOEBERLINIACEAE

†*Koeberlinia spinosa* Zuccarini

KRAMERIACEAE

Krameria bicolor S. Watson
†*Krameria erecta* Willdenow & Schultes

LAMIACEAE

Hedeoma nana (Torrey) Briquet var. *macrocalyx* W.S. Stewart
†*Hedeoma* cf. *nana*
†*Hyptis albida* Kunth
†*Monardella arizonica* Epling
Salvia columbariae Benth
††*Salvia mohavensis* Greene
†*Salvia pinguifolia* (Fernald) Wooton & Standley
***Salvia reflexa* Hornemann
Salvia vaseyi (Porter) Parish
Scutellaria mexicana (Torrey) A.J. Patton
Teucrium cubense Jacquin subsp. *depressum* (Small) E.M. McClintock & Epling
Teucrium glandulosum Kellogg

LINACEAE

Linum lewisii Pursh var. *lewisii*

LOASACEAE

Eucnide rupestris (Baillon) H.J. Thompson & W.R. Ernst
Mentzelia affinis Greene
Mentzelia albicaulis Douglas ex Hooker
Mentzelia involucrata S. Watson
Mentzelia isolata Gentry
Mentzelia longiloba J. Darlington var. *yavaipenis* J.J. Schenk & L. Hufford
†*Mentzelia puberula* J. Darlington
†*Petalonyx linearis* Greene
Petalonyx thurberi A. Gray subsp. *thurberi*

LYTHRACEAE (includes Punicaceae)

***Punica granatum* Linnaeus

MALPIGHIACEAE

†*Cottisia gracilis* (A. Gray) W.R. Anderson & C. Davis

MALVACEAE (includes Sterculiaceae)

Abutilon abutiloides (Jacquin) Garcke ex Hochreutiner
Abutilon incanum (Link) Sweet
Abutilon malacum S. Watson
Abutilon palmeri A. Gray
††?*Abutilon* sp.
Anoda abutiloides A. Gray
Anoda pentaschista A. Gray
Ayenia filiformis S. Watson
†*Ayenia microphylla* A. Gray
†*Eremalche exilis* (A. Gray) Greene
†*Herissantia crispa* (Linnaeus) Brizicky
Hermannia pauciflora S. Watson
Hibiscus biseptus S. Watson
Hibiscus coulteri Harvey ex A. Gray
†*Hibiscus denudatus* Benth
Horsfordia alata (S. Watson) A. Gray
Horsfordia newberryi (S. Watson) A. Gray
††?*Horsfordia* sp./spp.
**Malva parviflora* Linnaeus
Malvastrum bicuspidatum (S. Watson) Rose subsp. *bicuspidatum*
Malvella leprosa (Ortega) Krapovickas
Malvella sagittifolia (A. Gray) Fryxell
Rhynchosida physocalyx (A. Gray) Fryxell
Sida abutifolia Miller
†*Sphaeralcea ambigua* A. Gray subsp. *ambigua*
Sphaeralcea coulteri (S. Watson) A. Gray
Sphaeralcea emoryi Torrey ex A. Gray
Sphaeralcea laxa Wooton & Standley
††?*Sphaeralcea* sp./spp. (may include *S. ambigua*)

MARTYNIACEAE

Proboscidea altheifolia (Bentham) Decaisne
 Proboscidea parviflora (Wooton) Wooton & Standley subsp. parviflora

MOLLUGINACEAE

*Glinus lotoides Linnaeus
 *Mollugo cerviana (Linnaeus) Séringe

MONTIACEAE

Calandrinia ciliata (Ruiz & Pavón) de Candolle
 Cistanthe monandra (Nuttall) Hershkovitz
 Claytonia perfoliata Donn ex Willdenow subsp. mexicana (Rydberg) J.M. Miller & K.L. Chambers
 Phemeranthus aurantiacus (Engelmann) Kiger

MORACEAE

**Ficus carica Linnaeus
 Morus microphylla Buckley

NYCTAGINACEAE

Abronia villosa S. Watson var. villosa
 Acleisanthes longiflora A. Gray
 †Allionia incarnata Linnaeus
 *Boerhavia coccinea Miller
 Boerhavia erecta Linnaeus
 Boerhavia megaptera Standley
 †Boerhavia cf. megaptera Standley
 Boerhavia pterocarpa S. Watson.
 Boerhavia spicata Choisy var. palmeri S. Watson
 Boerhavia triquetra S. Watson
 †Boerhavia wrightii A. Gray
 ††?Boerhavia sp.
 Commicarpus scandens (Linnaeus) Standley
 Mirabilis coccinea (Torrey) Bentham & Hooker f.
 †Mirabilis laevis (Bentham) Curran var. villosa (Kellogg) Spellenberg
 ††Mirabilis cf. linearis (Pursh) Heimerl
 Mirabilis multiflora (Torrey) A. Gray
 Mirabilis tenuiloba S. Watson

OLEACEAE

†Forestiera phillyreoides (Bentham) Torrey
 †Forestiera cf. pubescens Nuttall
 Fraxinus velutina Torrey
 Menodora scabra A. Gray
 ††?Menodora sp.

ONAGRACEAE

Chylismia arenaria A. Nelson
 Chylismia claviformis (Torrey & Frémont) A. Heller subsp. peeblesii (Munz) W.L. Wagner & Hoch
 Chylismia claviformis subsp. rubescens (P.H. Raven) W.L. Wagner & Hoch
 Epilobium canum (Greene) P.H. Raven subsp. latifolium (Hooker) P.H. Raven
 Eremothera boothii (Douglas) W.L. Wagner & Hoch subsp. condensata (Munz) W.L. Wagner & Hoch

Eremothera chamaenerioides (A. Gray) W.L. Wagner & Hoch
Eulobus californicus Nuttall ex Torrey & A. Gray
Oenothera arizonica (Munz) W.L. Wagner
Oenothera curtiflora W.L. Wagner & Hoch
Oenothera deltoides Torrey & Frémont subsp. *deltoides*
Oenothera primiveris A. Gray

OROBANCHACEAE (includes Scrophulariaceae, in part)

Castilleja exserta (A. Heller) T.I. Chuang & Heckard subsp. *exserta*
Castilleja lanata A. Gray
 ††? *Castilleja* sp./spp.
 † *Orobanche cooperi* (A. Gray) A. Heller
Orobanche fasciculata Nuttall

OXALIDACEAE

Oxalis albicans Kunth

PAPAVERACEAE

Argemone gracilentia Greene
 ***Argemone ochroleuca* Sweet subsp. *ochroleuca*
Eschscholzia californica Chamisso subsp. *mexicana* (Greene) C. Clark
Eschscholzia minutiflora S. Watson

PHRYMACEAE (includes Scrophulariaceae, in part)

Erythranthe cordata (Greene) G.L. Nesom
 [*Mimulus cordatus* Greene. *M. guttatus* Fischer ex de Candolle, in part, missapplied]
Erythranthe rubella (A. Gray) N.S. Fraga
 [*Mimulus rubellus* A. Gray]

PHYTOLACCACEAE

Rivina humilis Linnaeus

PLANTAGINACEAE (includes Scrophulariaceae, in part)

Keckiella antirrhinoides (Bentham) Straw subsp. *microphylla* A. Gray) Straw
Maurandya antirrhiniflora Humboldt & Bonpland ex Willdenow
Neogaerrhinum filipes (A. Gray) Rothmaler
Nuttallanthus texanus (Scheele) D.A. Sutton
Penstemon parryi (A. Gray) A. Gray
Penstemon pseudospectabilis M.E. Jones subsp. *pseudospectabilis*
 ††? *Penstemon* sp.
 † *Plantago ovata* Forsskål var. *fastigiata* (E. Morris) S.C. Meyers & Liston
Plantago patagonica Jacquin
Pseudorontium cyathiferum (Bentham) Rothmaler
Saiocarpus pusillus (Brandege) D.A. Sutton
Saiocarpus watsonii (Vasey & Rose) D.A. Sutton
Stemodia durantifolia (Linnaeus) Swartz
Veronica peregrina Linnaeus subsp. *xalapensis* (Kunth) Pennell

PLUMBAGINACEAE

Plumbago zeylanica Linnaeus

POLEMONIACEAE

Aliciella latifolia (S. Watson) J.M. Porter subsp. latifolia
 Eriastrum diffusum (A. Gray) H. Mason
 Eriastrum eremicum (Jepson) H. Mason subsp. yageri (M.E. Jones) H. Mason
 Gilia flavocincta A. Nelson subsp. australis (A.D. & V.E. Grant) A.G. Day & V.E. Grant
 Gilia stellata A. Heller
 ††?Gila sp.
 Ipomopsis multiflora (Nuttall) V.E. Grant
 Langloisia setosissima (Torrey & A. Gray) Greene subsp. setosissima
 Leptosiphon aureus (Nuttall) J.M. Porter & L.A. Johnson subsp. aureus
 Linanthus aureus (Nuttall) Greene
 Linanthus bigelovii (A. Gray) Greene
 Linanthus cf. bigelovii
 Linanthus cf. bigelovii × jonesii (possible hybrid)
 Linanthus demissus (A. Gray) Greene
 Linanthus jonesii (A. Gray) Greene
 Linanthus cf. jonesii
 Loeseliastrum schottii (Torrey) Timbrook
 Phlox tenuifolia E.E. Nelson

POLYGALACEAE

Polygala macradenia A. Gray

POLYGONACEAE

†Chorizanthe brevicornu Torrey subsp. brevicornu
 †Chorizanthe corrugata (Torrey) Torrey & A. Gray
 †Chorizanthe rigida (Torrey) Torrey & A. Gray
 †Eriogonum abertianum Torrey
 Eriogonum deflexum Torrey var. deflexum
 †Eriogonum fasciculatum Bentham (var. unknown)
 †Eriogonum fasciculatum var. polifolium (Bentham) Torrey & A. Gray
 Eriogonum inflatum Torrey & Frémont
 Eriogonum maculatum A. Heller
 Eriogonum thomasii Torrey
 Eriogonum thurberi Torrey
 Eriogonum trichopes Torrey
 †Eriogonum wrightii Torrey ex Bentham (var. unknown)
 †Eriogonum wrightii var. nodosum (Small) Reveal
 Nemacaulis denudata Nuttall var. gracilis Goodman & L.D. Benson
 *Polygonum argyrocoleon Steudel ex Kunze
 Pterostegia drymarioides Fischer & C.A. Meyer
 Rumex hymenosepalus Torrey

PORTULACACEAE

Portulaca halimoides Linnaeus
 *Portulaca oleracea Linnaeus
 Portulaca suffrutescens Engelmann
 Portulaca umbraticola Kunth

PRIMULACEAE

**Anagallis arvensis Linnaeus subsp. arvensis

Androsace occidentalis Pursh

PUNICACEAE, see LYTHRACEAE

RANUNCULACEAE

† *Anemone tuberosa* Rydberg
Clematis drummondii Torrey & A. Gray
Delphinium scaposum Greene
† *Myosurus cupulatus* S. Watson
Myosurus minimus Linnaeus
†† *Myosurus nitidus* Eastwood

RESEDACEAE

Oligomeris linifolia (Vahl) J.F. Macbride

RHAMNACEAE

†† *Ceanothus vestitus* Greene
Condalia globosa I.M. Johnston var. *pubescens* I.M. Johnston
††? *Condalia globosa* &/or *C. warnockii*
Frangula betulifolia (Greene) Grubov
Rhamnus crocea Nuttall
† *Ziziphus obtusifolia* (Hooker ex Torrey & A. Gray) A. Gray var. *canescens* (A. Gray) M.C. Johnston

ROSACEAE

† *Vauquelinia californica* (Torrey) Sargent subsp. *sonorensis* W.J. Hess & Henrickson

RUBIACEAE

Galium aparine Linnaeus
Galium microphyllum A. Gray
† *Galium stellatum* Kellogg

RUTACEAE

Ptelea trifoliata Linnaeus
† *Thamnosma montana* Torrey & Frémont

SALICACEAE

Populus fremontii S. Watson subsp. *fremontii*
Salix gooddingii C.R. Ball

SANTALACEAE

† *Phoradendron californicum* Nuttall
†† *Phoradendron juniperinum* Engelman
†† *Phoradendron serotinum* (Rafinesque) M.C. Johnston

SAPINDACEAE

Dodonaea viscosa Jacquin var. *angustifolia* (Linnaeus f.) Bentham
Sapindus drummondii Hooker & Arnott

SCROPHULARIACEAE, see OROBANCHACEAE, PHRYMACEAE, and PLANTAGINACEAE

SIMAROUBACEAE

Castela emoryi (A. Gray) Moran & Felger

SIMMONDSIACEAE

†*Simmondsia chinensis* (Link) C.K. Schneider

SOLANACEAE

Capsicum annuum Linnaeus var. *glabriusculum* (Dunal) Heiser & Pickersgill

Chamaesaracha coronopus (Dunal) A. Gray

Datura discolor Bernhardi

††*Datura wrightii* Regel

Lycium andersonii A. Gray var. *andersonii*

Lycium berlandieri Dunal var. *longistylum* C.L. Hitchcock

†*Lycium* cf. *berlandieri*

Lycium californicum Nuttall ex A. Gray var. *californicum*

Lycium exsertum A. Gray

Lycium fremontii A. Gray var. *fremontii*

†*Lycium macrodon* A. Gray var. *macrodon*

Lycium parishii A. Gray var. *parishii*

††? *Lycium* sp./spp.

Nicotiana clevelandii A. Gray

***Nicotiana glauca* Graham var. *glauca*

†*Nicotiana obtusifolia* Martens & Galeotti

Petunia parviflora de Jussieu

**Physalis acutifolia* (Miers) Sandwith

Physalis lobata Torrey

Physalis versicolor Rydberg

††? *Physalis* sp./spp.

**Solanum americanum* Miller

Solanum douglasii Dunal

†*Solanum hindsianum* Bentham

Solanum xanti A. Gray

STERCULIACEAE, see MAVACEAE

TALINACEAE

Talinum paniculatum (Jacquin) Gaertner

TAMARICACEAE

***Tamarix aphylla* (Linnaeus) Karsten

**Tamarix chinensis* Loureiro

ULMACEAE, see CANNABACEAE

URTICACEAE

†*Parietaria hespera* B.D. Hinton var. *hespera*

VERBENACEAE

Aloysia wrightii (A. Gray) A. Heller ex Abrams

Glandularia gooddingii (Briquet) Solbrig

Glandularia latiloba (L.M. Perry) G.L. Nesom

[*Glandularia bipinnatifida* (Nuttall) Nuttall var. *latilobata* (L.M. Perry) B.L. Turner]

††? *Glandularia* sp./spp.

***Lantana camara* Linnaeus

Tetradlea coulteri A. Gray

Verbena bracteata Lagasca & Rodriguez

Verbena menthifolia Bentham

Verbena xylopoda (L.M. Perry) G.L. Nesom

VISCACEAE, see SANTALACEAE

ZYGOPHYLLACEAE

Fagonia californica Bentham subsp. *californica*

Fagonia californica subsp. *longipes* (Standley) Felger & C.H. Lowe

Fagonia pachyacantha Rydberg

Kallstroemia californica (S. Watson) Vail

Kallstroemia grandiflora Torrey ex A. Gray

††? *Kallstroemia* sp./spp.

† *Larrea divaricata* Cavanilles subsp. *tridentata* (Sessé & Moçino ex de Candolle) Felger & C.H. Lowe

**Tribulus terrestris* Linnaeus

MONOCOTYLEDONS

AGAVACEAE, see ASPARAGACEAE

ALISMATACEAE

Sagittaria sp.?

ALLIACEAE, see AMARYLLIDACEAE

AMARYLLIDACEAE

Allium macropetalum Rydberg

Habranthus longifolius (Hemsley) Flagg, G. Lom. Smith & Meerow

[*Zephyranthes longifolia* Hemsley]

ARECACEAE

***Washingtonia filifera* (Linden ex André) H. Wendland de Barry

ASPARAGACEAE (includes Agavaceae, Nolinaceae, Ruscaceae, Themidaceae)

Agave ×ajoensis W.C. Hodgson

† *Agave deserti* Engelmann subsp. *simplex* Gentry

Agave schottii Engelmann var. *schottii*

Dichelostemma capitatum (Bentham) Alph. Wood subsp. *pauciflorum* (Torrey) Keator

Hesperocallis undulata A. Gray

†† *Hesperoyucca whipplei* (Torrey) Baker

† *Nolina bigelovii* (Torrey) S. Watson

† *Nolina microcarpa* S. Watson

Triteleopsis palmeri (S. Watson) Hoover

Yucca baccata Torrey var. *brevifolia* L.D. Benson & Darrow

† *Yucca baccata* (var. unknown)

†† *Yucca brevifolia* Engelm
Yucca elata Engelm

COMMELINACEAE

Commelina erecta Linnaeus

CYPERACEAE

Cyperus esculentus Linnaeus var. *leptostachyus* Boeckeler
Cyperus laevigatus Linnaeus
Cyperus mutisii (Kunth) Andersson
Cyperus squarrosus Linnaeus
Eleocharis coloradoensis (Britton) Gilly
Eleocharis flavescens (Pioret) Urban var. *flavescens*
Eleocharis rostellata (Torrey) Torrey
Schoenoplectus americanus (Persoon) Volkart ex Schinz & R. Keller

HYDROCHARITACEAE (includes Najadaceae)

Najas marina Linnaeus

IRIDACEAE

Sisyrinchium demissum Greene

JUNCACEAE

Juncus bufonius Linnaeus
Juncus cooperi Engelm
Juncus mexicanus Willdenow ex Schultes & Schultes f.

LILIACEAE

Calochortus kennedyi Porter

NOLINACEAE, see ASPARAGACEAE

POACEAE

† *Aristida adscensionis* Linnaeus
Aristida californica Thurber var. *californica*
Aristida californica var. *glabrata* Vasey
† *Aristida purpurea* Nuttall var. *nealleyi* (Vasey) Allred
Aristida purpurea var. *parishii* (Hitchcock) Allred
† *Aristida* cf. *purpurea*
Aristida ternipes Cavanilles var. *gentilis* (Henrard) Allred
Aristida ternipes var. *ternipes*
* *Avena fatua* Linnaeus
† *Bothriochloa barbinodis* (Lagasca) Herter
† *Bothriochloa* cf. *barbinodis*
† *Bouteloua aristidoides* (Kunth) Grisebach
Bouteloua barbata Lagasca var. *barbata*
Bouteloua barbata var. *rothrockii* (Vasey) Gould
† *Bouteloua barbata* var. *barbata* and/or var. *rothrockii*
† *Bouteloua curtipendula* (Michaux) Torrey
† *Bouteloua repens* (Kunth) Scribner & Merrill
† *Bouteloua trifida* Thurber

Bromus carinatus Hooker & Arnott
 **Bromus madritensis* Linnaeus subsp. *rubens* (Linnaeus) Husnot
 ***Bromus tectorum* Linnaeus
 **Cenchrus ciliaris* Linnaeus
 **Cenchrus echinatus* Linnaeus
 **Cenchrus setaceus* (Forsskål) Morrone
 **Cenchrus spinifex* Cavanilles
Chloris virgata Swartz
Cottea pappophoroides Kunth
 **Cynodon dactylon* (Linnaeus) Persoon var. *dactylon*
 **Dactyloctenium aegyptium* (Linnaeus) Willdenow
 †*Dasyochloa pulchella* (Kunth) Willdenow ex Rydberg
 †*Digitaria californica* (Bentham) Henrard var. *californica*
Dinebra panicea (Retzius) P.M. Peterson & N. Snow subsp. *brachiata* (Steudel) P.M. Peterson & N. Snow
 [*Leptochloa panicea* (Retzius) Ohwi subsp. *brachiata* (Steudel) N.W. Snow]
Dinebra viscida (Scribner) P.M. Peterson & N. Snow
 [*Leptochloa viscida* (Scribner) Beal]
Diplachne fusca (Linnaeus) P. Beauvois ex Roemer & Schultz subsp. *uninervia* (J. Presl) P.M. Peterson & N. Snow
 [*Leptochloa fusca* (Linnaeus) Kunth subsp. *uninervia* (J. Presl) N. Snow]
Disakisperma dubium (Kunth) P.M. Peterson & N. Snow
 [*Leptochloa dubia* (Kunth) Nees]
Distichlis spicata (Linnaeus) Greene
 **Echinochloa colona* (Linnaeus) Link
 **Echinochloa crus-galli* (Linnaeus) P. Beauvois
Elymus elymoides (Rafinesque) Swezey var. *brevifolius* (J.G. Smith) Dorn
 †*Elymus* cf. *elymoides*
 **Enneapogon cenchroides* (Lichtenstein ex Roemer & Schultes) C.E. Hubbard
Enneapogon desvauxii P. Beauvis
 ***Eragrostis barrelieri* Daveau
 **Eragrostis cilianensis* (Allioni) Vignolo Lutati ex Janchen
Eragrostis intermedia Hitchcock
 **Eragrostis lehmanniana* Nees
Eragrostis pectinacea (Michaux) Nees var. *pectinacea*
 †*Eragrostis* cf. *pectinacea*
 †*Eriochloa acuminata* (J. Presl) Kunth var. *acuminata*
Eriochloa aristata Vasey var. *aristata*
 †*Festuca microstachys* Nuttall
 †*Festuca octoflora* Walter
 ††? *Festuca (Vulpia)* sp.
 †*Heteropogon contortus* (Linnaeus) P. Beauvois ex Roemer & Schultes
Hilaria belangeri (Steudel) Nash
 †*Hilaria rigida* (Thurber) Bentham ex Scribner
Hopia obtusa (Kunth) Zuloaga & Morrone
 **Hordeum murinum* Linnaeus subsp. *glaucum* (Steudel) Tzvelev
 ††*Hordeum pusillum* Nuttall
Leptochloa crinitia (Lagasca) P.M. Peterson & N. Snow
 [*Trichloris crinita* (Lagasca) Parodi]
Leptochloa dubia, *see* *Disakisperma dubium*
Leptochloa fusca subsp. *uninervia*, *see* *Diplachne fusca* subsp. *uninervia*

Leptochloa panicea subsp. *brachiata*, *see* *Dinebra panicea* subsp. *brachiata*
Leptochloa viscida, *see* *Dinebra viscida*
Melica frutescens Scribner
Muhlenbergia alopecuroides (Grisebach) P.M. Peterson & Columbus
Muhlenbergia appressa C.O. Goodding
Muhlenbergia dumosa Scribner ex Vasey
†*Muhlenbergia emersleyi* Vasey
Muhlenbergia fragilis Swallen
†*Muhlenbergia microsperma* (de Candolle) Kunth
††*Muhlenbergia polycaulis* Scribner
Muhlenbergia porteri Scribner ex Beal
Muhlenbergia rigens (Bentham) Hitchcock
Muhlenbergia tenuifolia (Kunth) Kunth
Panicum alatum Zuloaga & Morrone var. *alatum*
**Panicum antidotale* Retzius
†*Panicum hallii* Vasey var. *hallii*
†*Panicum hirticaule* J. Presl var. *hirticaule*
Pappophorum vaginatum Buckley
††*Paspalum* sp.
**Phalaris caroliniana* Walter
**Phalaris minor* Retzius
Phragmites australis (Cavanilles) Trinius ex Steudel subsp. *berlandieri* (E. Fournier) Saltonstall & Hauber
***Poa annua* Linnaeus
†*Poa bigelovii* Vasey & Scribner
††*Poa fendleriana* (Steudel) Vasey
**Polypogon monspeliensis* (Linnaeus) Desfontaines
**Polypogon viridis* (Gouan) Breistroffer
**Schismus arabicus* Nees
**Schismus barbatus* (Linnaeus) Thellung
†*Setaria grisebachii* E. Fournier
Setaria liebmannii E. Fournier
†*Setaria macrostachya* Kunth
**Sorghum halepense* (Linnaeus) Persoon
Sporobolus airoides (Torrey) Torrey subsp. *airoides*
Sporobolus cryptandrus (Torrey) A. Gray
Sporobolus flexuosus (Thurber ex Vasey) Rydberg
Sporobolus pyramidatus (Lamarck) Hitchcock
†*Stipa speciosa* Trinius & Ruprecht var. *speciosa*
Trichloris crinita, *see* *Leptochloa crinita*
Tridens eragrostoides (Vasey & Scribner) Nash
†*Tridens muticus* (Torrey) Nash var. *muticus*
***Triticum aestivum* Linnaeus
Urochloa arizonica (Scribner & Merrill) Morrone & Zuloaga
††*Zuloagaea bulbosa* (Kunth) Bess

POTAMOGETONACEAE (includes Zannichelliaceae)

Stuckenia pectinata (Linnaeus) Börner
Zannichellia palustris Linnaeus

RUPPIACEAE

Ruppia cirrhosa (Petagna) Grande

RUSCACEAE, see ASPARAGACEAE

THEMIDACEAE, see ASPARAGACEAE

TYPHACEAE

Typha domingensis Persoon

ZANNICHELLIACEAE, see POTAMOGETONACEAE

MOUNTAIN PLANTS OF ORGAN PIPE CACTUS NATIONAL MONUMENT

Approximately 135 taxa (132 species, one variety, and two hybrids) within the flora area are known only from the higher, larger mountains in the Monument. All 135 occur in the Ajo Mountains and some have population in other larger mountains in Organ Pipe, mostly at their upper elevations, i.e., Bates (BT), Diablo (DM), Growler (GM), Puerto Blanco (PB), and Santa Rosa (SR) Mountains (Fig. 2). Most of these populations are essentially desert “sky island” populations although some occur at lower elevations in these mountains. *Ericameria cuneata* probably also occurs in the Cabeza Prieta NWR portion of upper elevations in the Growler Mountains.

PTERIDACEAE

Argyrochosma limitanea
Astrolepis sinuata (BT)
Bommeria hispida (SR)
Cheilanthes villosa
Cheilanthes wrightii (BT)
Cheilanthes yavapensis
Pentagramma triangularis

GYMNOSPERMS

CUPRESSACEAE

Juniperus arizonica (PB)

EUDICOTS

ACANTHACEAE

Dicliptera resupinata
Justicia candicans
Justicia longii

AMARANTHACEAE

Amaranthus ×tucsonensis
Gomphrena sonorae

ANACARDIACEAE

Rhus aromatica

APIACEAE

Lomatium nevadense
Yabea microcarpa

APOCYNACEAE

Asclepias linaria
Haplophyton cimicidum
Matelea cordifolia

ASTERACEAE

Ageratina paupercula
Ambrosia cordifolia (DM)
Artemisia dracunculus
Brickellia californica
Brickellia frutescens (PB)
Ericameria cuneata (GM?)
Ericameria laricifolia
Gamochaeta stagnalis
Koanophyllon palmeri
Machaeranthera tagetina (DM)
Packera quercetorum
Perityle ajoensis
Pseudognaphalium canescens

BERBERIDACEAE

Berberis haematocarpa
Berberis harrisoniana

BORAGINACEAE

Harpegonella palmeri (SR)
Phacelia ramosissima

BRASSICACEAE

Boechera perennans
Erysimum capitatum
Hesperidanthus linearifolius (PB)
Thelypodium wrightii (DM)

CACTACEAE

Echinocereus santaritensis

CAMPANULACEAE

Triodanis biflora

CANNABACEAE

Celtis reticulata

CARYOPHYLLACEAE

Cerastium texanum (DM)

CONVOLVULACEAE

Cuscuta californica (SR)
Ipomoea costellata
Ipomoea cristulata
Jacquemontia pringlei

CRASSULACEAE

Graptopetalum rusbyi

CUCURBITACEAE

Echinopepon wrightii
Marah gilensis

EUPHORBIACEAE

Euphorbia arizonica?
Euphorbia capitellata
Euphorbia melanadenia

FABACEAE

Acaciella angustissima
Astragalus didymocarpus
Dalea pringlei
Desmodium procumbens
Galactia wrightii
Mimosa distachya (SR)
Nissolia schottii (SR)
Phaseolus acutifolius
Rhynchosia texana
Tephrosia vicioides
Trifolium wormskioldii (DM)

FAGACEAE

Quercus turbinella

GERANIACEAE

Geranium carolinianum

GROSSULARIACEAE

Ribes quercetorum

LAMIACEAE

Monardella arizonica
Salvia pinguifolia

MALVACEAE

Abutilon abutiloides (PB)
Anoda abutiloides
Anoda pentaschista
Hermannia pauciflora
Hibiscus biseptus
Malvastrum bicuspidatum

Sida abutilifolia

MONTIACEAE

Calandrinia ciliata (PB)

Claytonia perfoliata

Phemeranthus aurantiacus

MORACEAE

Morus microphylla

NYCTAGINACEAE

Boerhavia megaptera

Mirabilis coccinea

Mirabilis multiflora

OLEACEAE

Forestiera phyllyreoides (PB)

Fraxinus velutina

ONAGRACEAE

Epilobium canum

OXALIDACEAE

Oxalis albicans

PHYTOLACCACEAE

Rivina humilis (DM)

PLANTAGINACEAE

Castilleja lanata

Keckiella antirrhinoides

Stemodia durantifolia

PLUMBAGINACEAE

Plumbago zeylanica

POLEMONIACEAE

Ipomopsis multiflora

Phlox tenuifolia (DM)

PORTULACACEAE

Portulaca suffrutescens

Portulaca umbraticola

PRIMULACEAE

Androsace occidentalis (DM)

RANUNCULACEAE

Anemone tuberosa

Myosurus cupulatus

RHAMNACEAE

Frangula betulifolia
Rhamnus crocea

ROSACEAE

Vauquelinia californica (DM, PB)

RUBIACEAE

Galium microphyllum

RUTACEAE

Ptelea trifoliata

SOLANACEAE

Capsicum annuum
Solanum douglasii (BT, DM)
Solanum xanti

TALINACEAE

Talinum paniculatum

MONOCOTYLEDONS

AMARYLLIDACEAE

Habranthus longifolius

ASPARAGACEAE

Agave ×ajoensis
Agave schottii (DM)
Nolina microcarpa
Yucca baccata

COMMELINACEAE

Commelina erecta

LILIACEAE

Calochortus kennedyi

POACEAE

Bouteloua barbata var. rothrockii (BT)
Bouteloua curtipendula (PB)
Disakisperma dubium
Elymus elymoides
Eragrostis intermedia
Festuca microstachys
Hilaria belangeri
Melica frutescens
Muhlenbergia alopecuroides
Muhlenbergia appressa
Muhlenbergia dumosa
Muhlenbergia emersleyi

Muhlenbergia fragilis
Muhlenbergia rigens
Muhlenbergia tenuifolia
Pappophorum vaginatum
Setaria grisebachii
Setaria liebmannii
Tridens eragrostoides

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LITERATURE CITED

- Felger, R.S., S. Rutman, J. Malusa, and T.R. Van Devender. 2013. Ajo Peak to Tinajas Altas: Flora of Southwestern Arizona: An introduction. *Phytoneuron* 2013-5: 1–40.
- Felger, R.S., S. Rutman, T.R. Van Devender, and S.M. Buckley. 2012b. Checklist of vascular plants of Organ Pipe Cactus National Monument, Cabeza Prieta National Wildlife Refuge, and Tinajas Altas, Arizona. *Canotia* 8: 1–53.
- Felger, R.S., T.R. Van Devender, B. Broyles, & J. Malusa. 2012a. Flora of Tinajas Altas, Arizona—A century of botanical forays and forty thousand years of *Neotoma* chronicles. *J. Bot. Res. Inst. Texas* 6: 157–257.
- Slone, S.C. (prepared by). 2011. Draft Environmental Assessment: Cabeza Prieta National Wildlife Refuge Sonoran Pronghorn Supplemental Water and Forage Project. <http://wildernesswatch.org/pdf/SPH_Waters_Draft_EA_110505.pdf>
- Organ Pipe Cactus National Monument. 2011. Organ Pipe Cactus National Monument: Superintendent's 2010 Report on Natural Resource Vital Signs. National Park Service, Ajo, Arizona. <www.nps.gov/orpi/naturescience/vital-signs-report.htm>