

FLORA OF CANADA DEL ORO WASH, PIMA COUNTY, ARIZONA

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ABSTRACT: This study establishes a baseline flora for the Pima County Regional Flood Control District’s natural resource park, *The Oasis*, along the Canada del Oro wash. The study site is an ephemeral wash lined with Sonoran Deciduous Riparian Scrub and Sonoran Interior vegetation types, including about 220 acres. In total, 153 taxa in 38 families were identified between September 2015 and September 2017. Plant families with the largest presence include Asteraceae (28 taxa), Poaceae (26 taxa), Boraginaceae (13 Taxa), and Fabaceae (11 Taxa).

THE STUDY AREA

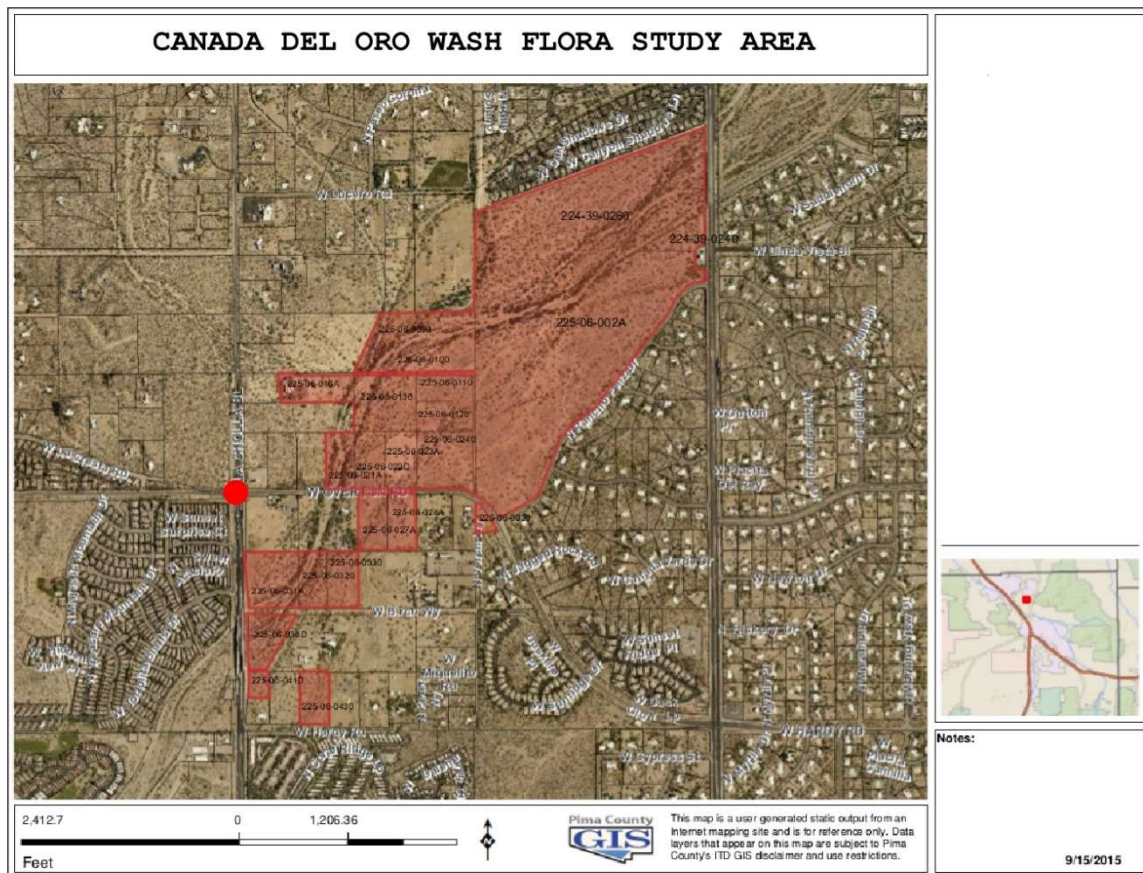


Figure 1. Map of study area. Red shading indicates study area. Red dot indicates corner of N La Cholla Blvd. and W Overton Rd.

Location: The study area, *The Oasis*, on the Canada del Oro (CDO) wash and adjacent mesquite woodlands (bosques) (Fig. 1), includes elevations varying between 705 –755 meters

as measured by GPS (+/- 5 meters), the low point being under the La Cholla Bridge near the southwest corner and the high point being just east of the La Canada water tank near the northeast corner. The center point is approximately at 32° 22' 43" North and 111°00' 21.65" West.

Site History: The study area consists of 22 parcels acquired by the District between 1984 and 2014. Eight of the parcels originally contained structures that have since been removed. Foundations of various structures can be seen when visiting the study area. Recently, the District fenced the site in an effort to restrict off-road vehicles. Despite the fencing, evidence of off-road vehicle traffic is still present within the study area due to access where Overton Road crosses the CDO wash. A paved path runs the length of the study area from the Northeast corner to the Southwest corner. The area is used for bicycling, horseback riding and hiking.

Substrate and Geology: The entire area consists of Pleistocene/Holocene sand and gravel deposits along the CDO wash (and tributaries) and immediately above it. The sand and gravel consist of a mixture of Catalina Gneiss and Catalina Granite (Chronic 1983). The soil along the major washes (CDO and major tributaries) consists of the Arizo-Riverwash Complex and the higher ground consists of Anthony fine sandy loam. There is also a small area in the northeast corner where the surface consists of very cobbly sandy soil of the Pinaleno-Stagecoach-Palos Verdes complex (Soil Survey Staff, 2018).

Climate: The climate in Oro Valley consists of two relatively wet periods, December to March and late June to mid-September, with very dry periods in between. The December to March wet period is due to moist air flowing in from the Pacific. The rain during this period is gentle and usually widespread. The June to mid-September wet period is due to tropical air flowing in from the south and is characterized by violent thunderstorms and localized torrential rain fall. Occasionally the period of September to November can experience a tropical depression from the Sea of Cortez which will cause significant rain fall. The temperatures from late April to October normally range from 35–40° C during the day although occasionally they can reach 45° C. From November to mid-April, temperatures during the day are normally quite mild with an occasional freeze at night (Phillips et al. 2000).

Vegetation: There are two biotic communities in the study area: Sonoran Interior Strands and Sonoran Deciduous Riparian Scrub, described in the Pima County *Sonoran Desert Conservation Plan* (Harris et al. 2000). Both of these biotic communities consist of riparian vegetation. On the lower ground, *Baccharis sarothroides* is conspicuous along with *Chilopsis linearis* and various *Ambrosia* species, especially *A. monogyra*. These are in addition to many herbs and grasses that grow in the low, locally wetter, locations. On the higher ground, the dominant trees are *Prosopis velutina* and *Parkinsonia florida*. The dominant shrubs are *Larrea tridentata* and two *Gutierrezia* species. On the rockier soils, *Senna covesii* and *Encelia farinosa* are conspicuous, but are not found in the Anthony fine sandy loam. In addition, there are several locations where cacti are locally common including *Ferocactus wislizeni*, and the various *Opuntia* spp. and *Cylindropuntia* spp. *Carnegiea gigantea* only occurs in a few locations with one obviously very old individual and several young plants.

The largest families are the Asteraceae with 28 species and Poaceae with 26 species followed by the Boraginaceae with 13 species, Fabaceae with 11 species, Brassicaceae and the Cactaceae both with 7 species and finally the Amaranthaceae and the Malvaceae with 5 species each. This distribution of families is as expected in this area.

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Twenty-eight of the 153 species found, or 18%, are non-native. This relatively high percentage of non-natives is a reflection of the disturbed nature of the study area. Disturbances include natural periodic flooding and human caused disturbances such as old homesteads and off-road vehicles.

Not surprisingly, annuals account for 82 species or over half the total. Shrubs or subshrubs are next with 33 species (one *Yucca* and one *Agave* are considered shrubs). Perennial herbs number 25, two of which are climbers (*Funastrum cynanchoides* and *Clematis drummondii*). There are 7 cacti ranging from one small species (*Echinocereus fendleri*) to the tree-like *Carnegiea gigantea*. Finally, there are 6 species of trees.

The lack of small cacti is surprising. Only one individual of one species (*Echinocereus fendleri*) was found in the study area. I believe that reflects the relative instability of the substrate, which is mostly sand, and of the periodic flooding. Annuals, that can come and go quickly, or trees or shrubs, that are large enough to resist flooding, seem to do better in this unstable environment. Interestingly *Echinocereus fendleri* was found in the small area of relatively rocky more stable soil in the extreme northeast corner of the study area.

The perennials and subshrubs tend to be: 1) plants with short life cycles (e.g., *Baileya multiradiata*); 2) strong and deep-rooted subshrubs (e.g., *Ambrosia salsola*); plants found only near the wash edges on higher more stable ground (e.g., *Penstemon parryi*); climbers anchored to strong trees or fences (e.g., *Clematis drummondii*); or rare species (e.g., *Cucurbita digitata*). There are however a few exceptions, like *Ambrosia confertiflora*, which seem to do quite well in the unstable environments.

METHODS

Taxonomic scope—Collections were limited to vascular plants. Specimens in the Poaceae were identified using *Grasses of the Southwestern United States* (Gould 1993) and Flora of North America vol. 24 and 25 (Flora of North America editorial committee 2003 and 2007). The genus *Cryptantha* was identified using the San Diego State University web page *Cryptantha s.s. Taxonomy & Images* (Simpson 2018). The remaining plants were identified using the *Flora of North America* (Flora of North America editorial committee 2003+) and the *Arizona Flora* (Kearney et al. 1960). Any doubtful identifications were resolved by comparing the unknown plants to herbarium sheets at the University of Arizona Herbarium. Accepted names and synonyms follow The Plant List (The Plant List 2013).

There were 63 individual collecting trips over two years from September 2015 to September 2017. One of the trips was with Ries Lindley and Brian Gersten. The rest of the trips were on my own. Each specimen was photographed several times before being collected. The photographs are in SEINet attached to my SEINet collecting records (SEINet Portal Network, 2018). Plants were only collected from land owned by the District (Figure 1). The collected material was processed (pressed and dried) using standard procedures and equipment. The University of Arizona was the first depository of the vouchers, with the Desert Botanical Gardens and Arizona State University as secondary locations.

Herbarium search—SEINet was searched for specimens collected in the study area prior to this study, but none were found. (SEINet Portal Network, 2018)

Catalog of the Vascular Plants of the Canada del Oro Wash

All collections (indicated by collection numbers) were made by the author.

Names preceded by an asterix (*) indicate introduced species.

ACANTHACEAE

Justicia californica (Benth.) D. Gibson. Beloperone. Shrub. 171

AIZOACEAE

Trianthema portulacastrum L. Desert Horsepurslane. Annual Herb. 136

AMARANTHACEAE

Amaranthus fimbriatus (Torr.) Benth. ex S. Wats. Fringed Amaranth. Annual herb. 3

Amaranthus palmeri S. Wats. Carelessweed. Annual herb. 117.

Atriplex canescens (Pursh) Nutt. Four-wing Saltbush. Perennial shrub. 28, 127, 128

Chenopodium incanum (S. Wats.) Heller. Mealy Goosefoot. Annual herb. 107

Tidestromia suffruticosa (Torr.) Standl. Shrubby Honeysweet. Perennial subshrub. 19

APOCYNACEAE—DOGBANE FAMILY

Sarcostemma cynanchoides subsp. *hartwegii* (Vail) R. W. Holm. [*Funastrum cynanchoides* (Decne.) Schltr.].

Fringed Twinevine. Perennial herb. Twining vine. 111

ARECACEAE—PALM FAMILY

**Washingtonia robusta* H. Wendl. Washington Fan Palm. Tree. Two individuals occurred next to some old foundations. 30

ASPARAGACEAE—ASPARAGUS FAMILY

**Agave* cf. *univittata* Haw. [*Agave heteracantha* Zucc] McKelvey's century plant. Shrub. Garden escape. 130

Dichelostemma capitatum (Benth.) Alph. Wood. [*Dipterostemon capitatus* (Benth.) Rydb.] Bluedicks. Perennial herb. 185

Yucca elata (Engelm.) Engelm. Soaptree Yucca. Shrub. Native to the region, but this was probably planted. 197

ASTERACEAE—ASTER FAMILY

Ambrosia ambrosioides (Cav.) W. W. Payne. [*Franseria ambrosioides* Cav.]. Ambrosia Leaf Bur Ragweed. Shrub. 91

Ambrosia confertiflora DC. [*Franseria confertiflora* (DC.) Rydb.]. Weakleaf Bur Ragweed. Perennial herb. 18, 144

Ambrosia deltoidea (Torr.) W. W. Payne. [*Franseria deltoidea* Torr.]. Triangle Bur Ragweed. Shrub. 180

Ambrosia monogyra (Torr. & A. Gray) Strother & B. G. Baldwin. [*Hymenoclea monogyra* Torr. & A. Gray.]. Singlewhorl Burrobush. Shrub. 163, 36, 108, 157

Baccharis salicina Torr. & A. Gray [*Baccharis salicifolia* (Ruiz & Pav.) Pers.]. Mule-fat. Shrub. 151

Ambrosia salsola (Torr. & A. Gray) Strother & B. G. Baldwin. [*Hymenoclea salsola* Torr. & A. Gray ex Torr. & A. Gray.]. Burrobrush. Perennial/subshrub. 88

Baccharis sarothroides A. Gray. Desertbroom. Shrub. 31

Baileya multiradiata Harv. & A. Gray ex Torr. [*Baileya australis* Rydb.]. Desert Marigold. Annual/perennial herb. 23, 131

**Centaurea melitensis* L. Maltese Star-Thistle. Annual/biennial herb. 193

Encelia farinosa A. Gray ex Torr. Brittlebush. Shrub. 39

Encelia frutescens (A. Gray) A. Gray. Button Brittlebush. Shrub. 129, 187

Erigeron neomexicanus A. Gray. [*Achaetogeron sophiaefolius* Larsen] New Mexico Fleabane. Perennial herb. 79

Filago depressa A. Gray. Dwarf Cottonrose. Annual herb. 176

Gutierrezia microcephala (DC.) [*Brachyris microcephala* DC.]. Threadleaf Snakeweed. Perennial/subshrub. 181

Gutierrezia serotina Greene. [*Gutierrezia polyantha* A.Nels.]. Late Snakeweed. Shrub. 106

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- Heterotheca subaxillaris* (Lam.) Britton & Rusby. [*Chrysopsis scabra* (Pursh) Ell.] Camphorweed. Annual/perennial herb. 15
- Hymenothrix wislizeni* A. Gray. Trans-Pecos Thimblehead Annual/biennial herb. 38
- Isocoma tenuisecta* Greene. [*Haplopappus acradenius* (Greene) S. F. Blake]. Burroweed. Perennial/subshrub. 16
- **Lactuca serriola* L. [*Lactuca scariola* L.] Prickly Lettuce. Annual/biennial herb. 114
- Machaeranthera asteroides* (Torr.) Greene [*Machaeranthera asteroides* var. *glandulosa* B. L. Turner.][*Dieteria asteroides* Torr.] Fall Tansyaster. Biennial/perennial herb. 26
- Machaeranthera pinnatifida* var. *gooddingii* (A. Nelson) B. L. Turner [*Xanthisma spinulosum* (Pursh) D. R. Morgan & R. L. Hartm.]. Lacy Tansyaster. Perennial/subshrub. 29, 96
- Machaeranthera tagetina* Greene. [*Aster tagetinus* (Greene) S. F. Blake]. Mesa Tansyaster. Annual herb. 37
- **Oncosiphon piluliferum* (L. f.) Kallersjo. [*Matricaria globifera* (Thunb.) Frenzl ex Harv.]. Stinknet. Annual herb. 189
- Pectis papposa* Harv. & A. Gray. Manybristle Chinchweed. Annual herb. 14
- **Sonchus oleraceus* (L.) L. Common Sowthistle. Annual herb. 83
- Verbesina encelioides* (Cav.) Benth. & Hook.f. ex A. Gray. [*Verbesina scabra* Benth.] Golden Crownbeard. Annual herb. 112, 169
- Xanthium strumarium* L. [*Xanthium acerosum* Greene] Rough Cocklebur. Annual herb. 145
- Zinnia acerosa* (DC.) A. Gray. Desert Zinnia. Perennial/subshrub. 27

BIGNONIACEAE–BIGNONIA FAMILY

- Chilopsis linearis* (Cav.) Sweet. Desert Willow. Tree. 100

BORAGINACEAE–FORGET-ME-NOT FAMILY

- Amsinckia menziesii* (Lehm.) A. Nelson & J. F. Macbr. [*Amsinckia hispidissima* Suksd.] Menzie's Fiddleneck. Annual herb. 43
- Amsinckia menziesii* var. *intermedia* (Fisch. & C. A. Mey.) [*Amsinckia arizonica* Suksdorf] Common Fiddleneck. Annual herb. 78, 178
- Cryptantha micrantha* (Torr.) I. M. Johnst. [*Eremocarya lepida* (A. Gray) Greene] Redroot Cryptantha. Annual herb. 191
- Cryptantha barbiger* (A. Gray) Greene. [*Eritrichium barbigerum* A. Gray] Bearded cryptantha. Annual herb. 179
- Cryptantha pterocarya* (Torr.) Greene. Wingnut Cryptantha. Annual herb. 73, 182
- Cryptantha angustifolia* (Torr.) Greene. [*Johnstonella angustifolia* (Torr.) Hasenstab & M.G.Simpson.] Panamint Cryptantha. Annual herb. 81
- Eucrypta micrantha* (Torr.) A. Heller. [*Ellisia micrantha* (Torr.) Brand] Dainty Desert Hide-seed. Annual herb. 183
- Lappula occidentalis* (S. Watson) Greene. [*Lappula redowskii* subsp. *occidentalis* (S. Watson) Á. Löve & D. Löve] Flatspine Stickseed. Annual herb. 52, 56
- Nama hispida* A. Gray. [*Nama foliosum* (Woot. & Standl.) Tidestr.] Bristly Nama. Annual herb. 21, 90
- Pectocarya platycarpa* (Munz & I. M. Johnst) Munz & I. M. Johnst. [*Pectocarya gracilis* var. *platycarpa* Munz & Johnston] Broadfruit Combseed. Annual herb. 47, 59
- Phacelia campanularia* A. Gray. Desertbells. Annual herb. 71
- Phacelia crenulata* Torr. ex S. Watson. Cleftleaf wildheliotrope. Annual herb. 70
- Plagiobothrys arizonicus* (A. Gray) Greene ex A. Gray. Arizona Popcorn-flower. Annual herb. 58

BRASSICACEAE–MUSTARD FAMILY

- **Capsella bursa-pastoris* (L.) Medik. [*Bursa bursa-pastoris* (L.) Britton] Shepherd's Purse. Annual herb. 65
- **Chorispora tenella* (Pall.) DC. Cross Flower. Annual herb. 63
- Draba cuneifolia* var. *integrifolia* S. Watson. California Draba. Annual herb. 60
- Lepidium oblongum* Small. Veiny Pepper-weed. Annual/biennial herb. 46
- Physaria gordonii* (A. Gray) O'Kane & Al-Shehbaz. [*Lesquerella gordonii* (A. Gray) S. Watson]. Gordon's Bladderpod. Annual herb. 53
- **Sisymbrium altissimum* L. [*Norta altissima* (L.) Britt.] Tall Tumblemustard. Annual/biennial herb. 49

**Sisymbrium irio* L. [*Norta irio* (L.) Britt.] London Rocket. Annual herb. 42

CACTACEAE–CACTUS FAMILY

- Carnegiea gigantea* (Engelm.) Britton & Rose. [*Cereus giganteus* Engelm.] Saguaro. Tree. 103
Cylindropuntia fulgida (Engelm.) F. M. Knuth. [*Opuntia fulgida* Engelm.] Jumping Cholla. Shrub. 101
Cylindropuntia versicolor (Engelm. ex Toumey) F. M. Knuth [*Cylindropuntia thurberi* subsp. *versicolor*].
 Staghorn Cholla. Shrub. 99
Echinocereus engelmannii subsp. *fendleri* (Engelm. ex S. Watson) Blum, Lange, & Rutow. Pink Flower
 Hedgehog Cactus. Small perennial succulent. 190
Ferocactus wislizeni (Engelm.) Britton & Rose [*Echinocactus wislizeni* Engelm.] Candy Barrelcactus. Shrub.
 199
Opuntia engelmannii Salm-Dyck ex Engelm. [*Opuntia subarmata* Griffiths] Cactus Apple. Shrub. 194
Opuntia santarita (Griffiths & Hare) J. N. Rose [*Opuntia santa-rita* (Griffiths & Hare) Rose] Santa Rita
 Pricklypear. Shrub. 105

CANNABACEAE–CANNABIS FAMILY

Celtis pallida Torr. [*Celtis ehrenbergiana* (Klotzsch) Liebm.]. Spiny Hackberry. Shrub. 122

CLEOMACEAE–BEEPLANT FAMILY

Polanisia dodecandra (L.) Dc. [*P. trachysperma* Torr. & A. Gray]. Redwhisker Clammyweed. Annual herb.
 109

CONVOLVULACEAE–MORNING GLORY FAMILY

- Ipomoea barbatisepala* A. Gray. Canyon Morning-Glory. Annual herb. 153
 **Ipomoea nil* (L.) Roth [*Ipomoea hederacea* (L.) Jacq.] Ivyleaf Morning-Glory. Annual herb. 150
Ipomoea ternifolia Cav. Tripleleaf Morning-Glory. Annual herb. 149, 152

CRASSULACEAE–STONECROP FAMILY

Crassula connata (Ruiz & Pav.) A. Berger. [*Tillaea erecta* Hook. & Arn.]. Sand Pygmy-weed. Annual herb.
 177

CUCURBITACEAE–GOURD FAMILY

Cucurbita digitata A. Gray. Fingerleaf Gourd. Perennial herb. 54

CYPERACEAE–SEDGE FAMILY

Cyperus eragrostis Lam. [*Cyperus vegetus* Willd.] Tall Flatsedge. Perennial herb. Maybe no longer in existence.
 This was seen in a temporary wetland formed by the water output of an air-conditioner. Later the wetland
 disappeared. 115

EPHEDRACEAE–MORMON TEA FAMILY

Ephedra trifurca Torr. ex S. Watson longleaf jointfir. Shrub. 45

EUPHORBIACEAE–SPURGE FAMILY

- Croton californicus* Mull. Arg. California croton. Perennial herb/subshrub. 125
Euphorbia hyssopifolia L. [*Chamaesyce hyssopifolia* (L.) Small]. Hyssopleaf Sandmat. Annual/perennial herb.
 118, 119
Euphorbia micromera Boiss. ex Engelm. [*Chamaesyce micromera* (Boiss. ex Engelm.) Wootton & Standl.].
 Sonoran Sandmat. Annual herb. 117

FABACEAE–PEA FAMILY

- Acacia constricta* A. Gray [*Vachellia constricta* (Benth.) Seigler & Ebinger.] Whitethorn Acacia. Shrub to small
 tree. 40
Acacia greggii A. Gray [*Senegalia greggii* (A. Gray) Britton and Rose.] Catclaw Acacia. Shrub. 102

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- Acmispon oroboides* (Kunth) Brouillet. [*Lotus oroboides* (Kunth) Ottley] New Mexico Bird's-Foot Trefoil. Perennial herb. 69
- Astragalus lentiginosus* Hook. Freckled Milkvetch. Annual/perennial/subshrub. 55
- Lupinus concinnus* J. Agardh. Bajada Lupine. Annual herb. 85
- Lupinus sparsiflorus* Benth. [*L. sparsiflorus* subsp. *Mohavensis* Dziekanowski & D. B. Dunn. SLW]. Coulter's Lupine. Annual herb. 61
- **Melilotus indicus* (L.) All. [*Melilotus indica* (L.) All.] Annual Yellow Sweetclover. Annual herb. 80
- Olneya tesota* A. Gray. Desert Ironwood. Tree. 104
- Parkinsonia florida* (A. Gray) S. Watson [*Cercidium floridum* Benth. ex A. Gray]. Palo Verde. Tree. 92
- Prosopis velutina* Wooton [*P. juliflora* var. *velutina* (Wooton) Sarg.]. Velvet Mesquite. Tree. 8
- Senna covesii* (A. Gray) H. S. Irwin & Barneby. [*Cassia covesii* A. Gray]. Coues' Cassia. Shrub. 121

GERANIACEAE—GERANIUM FAMILY

- **Erodium cicutarium* (L.) L'Hér. [*Geranium cicutarium* L.] Red-stem Stork's Bill. Annual/biennial herb. 44

LAMIACEAE—MINT FAMILY

- Salvia columbariae* Benth. Chia. Annual herb. 87

LOASACEAE—LOASA FAMILY

- Mentzelia multiflora* (Nutt.) A. Gray. Adonis Blazingstar. Biennial/perennial herb. 98
- Petalonyx thurberi* A. Gray. Thurber's Sandpaper Plant. Shrub. 123

MALVACEAE—MALLOW FAMILY

- Thespesia lampas* (Cav.) Dalzell [*Gossypium thurberi* Tod.] Thurber's Cotton. Shrub. 133
- **Malva parviflora* L. Cheeseweed Mallow. Annual/perennial herb. 172
- Sphaeralcea ambigua* subsp. *rosacea* (Munz & I. M. Johnst.) Kearney. Rose Globemallow. Shrub. 95
- Sphaeralcea coulteri* (S. Watson) A. Gray. Coulter's Globemallow. Annual herb. 192
- Sphaeralcea emoryi* Torr. ex A. Gray. Emory's Globemallow. Perennial subshrub. 94

MARTYNIACEAE—UNICORN PLANT FAMILY

- Proboscidea althaeifolia* (Benth.) Decne. [*Martynia althaeifolia* Benth.] Desert Unicorn-Plant. Perennial herb. 25
- Proboscidea parviflora* (Wooton) Wooton & Standl. [*Martynia parviflora* Wooton] Doubleclaw. Annual herb. 134

MOLLUGINACEAE—CARPETWEED FAMILY

- Mollugo verticillata* L. [*Mollugo berterana* Ser.] Green Carpetweed. Annual herb. 6

NYCTAGINACEAE—FOUR-O'CLOCK FAMILY

- Allionia incarnata* L. [*Allionia craterimorpha* Rusby] Trailing Windmills. Annual/perennial herb. 7, 24
- Boerhavia coulteri* (Hook. f.) S. Watson [*B. spicata* var. *palmeri* S. Watson]. Coulter's Spiderling. Annual/perennial herb. 142

ONAGRACEAE—EVENING PRIMROSE FAMILY

- Eulobus californicus* Nutt. [*Camissonia californica* (Nutt.) P. H. Raven. *Oenothera leptocarpa* Greene]. California Suncup. Annual/perennial herb. 84, 93
- Oenothera primiveris* A. Gray. Desert Evening Primrose. Annual herb. 57

PAPAVERACEAE—POPPY FAMILY

- Argemone pleiacantha* Greene. Southwestern Pricklypoppy. Perennial herb. 89
- Eschscholzia californica* subsp. *mexicana* (Greene) C. Clark. California Poppy. Annual herb. 68

PLANTAGINACEAE—PLANTAIN FAMILY

- Nuttallanthus texanus* (Scheele) D.A.Sutton. [*Linaria canadensis* var. *texana* (Scheele) Pennell] Texas Toadflax. Annual/biennial herb. 184
- Penstemon parryi* (A. Gray) A. Gray. [*Penstemon puniceus* var. *parryi* A. Gray] Parry's Penstemon. Perennial herb. 75
- Plantago patagonica* Jacq. [*P. purshii* Roem. & Schult.]. Largebracted Plantain. Annual/perennial herb. 76
- Veronica anagallis-aquatica* L. Water speedwell. Biennial/perennial herb. Maybe no longer in existence within the study area. Found next to an outlet of an air conditioner that was leaking in a small wetland. 116

POACEAE—GRASS FAMILY

- Aristida purpurea* Nutt. Purple Threeawn. Annual/perennial. 195
- Bouteloua aristidoides* (Kunth) Griseb. [*Aristida unilateralis* Willd. ex Steud.] Needle Grama. Annual. 13
- Chondrosum barbatum* (Lag.) Clayton [*Bouteloua barbata* Lag.] Sixweeks grama. Annual. 196
- Bromus arizonicus* (Shear) Stebbins. [*Ceratochloa arizonica* (Shear) Holub] Arizona Brome. Annual. 187
- **Bromus rubens* L. [*Anisantha rubens* (L.) Nevski] Red Brome. Annual. 51, 64
- **Cenchrus ciliaris* L. [*Pennisetum ciliare* (L.) Link] Buffelgrass. Perennial. 41, 173
- **Pennisetum setaceum* (Forssk.) Chiov. [*Cenchrus setaceus* (Forssk.) Morrone.] Fountain grass. Perennial. 174
- Chloris virgata* Sw. [*Chloris alba* J.Presl] Feather Fingergrass. Annual. 35, 113
- **Echinochloa colona* (L.) Link. Jungle rice. Annual. 110
- Eragrostis barrelieri* Daveau. [*Eragrostis poaeoides* var. *barrelieri* (Daveau) Fiori] Mediterranean lovegrass. Annual. 168
- **Enneapogon cenchroides* (Licht. Ex Roem. & Schult.) C. E. Hubb. [*Enneapogon mollis* Lehm.] Soft Feather Pappusgrass. Annual/perennial. 86, 139, 141, 154, 138
- **Eragrostis cilianensis* (All.) Janch. [*Briza eragrostis* L.] Stinkgrass. Annual. 12, 147, 165
- **Eragrostis curvula* (Schrad.) Nees. [*Eragrostis chloromelas* Steud.] Weeping lovegrass. Perennial. 22, 74, 156
- **Eragrostis lehmanniana* Nees. Lehmann Lovegrass. Perennial. 143, 167
- Eriochloa aristata* Vasey. [*Eriochloa punctata* var. *aristata* (Vasey) M. E. Jones] Bearded cupgrass. Annual. 155, 166
- Eragrostis mexicana* (Hornem.) Link. Mexican lovegrass. Annual. 160
- **Hordeum murinum* L. Mouse barley. Annual. 62, 66
- **Leptochloa panicea* (Retz.) Ohwi. Mucronate Sprangletop. Annual/perennial. 146
- **Melinis repens* (Willd.) Zizka. [*Erianthus repens* (Willd.) P. Beauv.] Rose natalgrass. Annual/Perennial. 34
- Muhlenbergia microsperma* (DC.) Trin. [*Agrostis microcarpa* Steud.] Littleseed muhly. Annual. 158, 175
- **Schismus barbatus* (L.) Thell. [*Electra brevifolia* Nees ex Steud.] Common Mediterranean Grass. Annual.
- Setaria leucopila* (Scribn. & Merr.) K. Schum. [*Chaetochloa leucopila* Scribn. & Merr.] Streambed bristlegrass. Perennial. 132
- Sporobolus contractus* Hitchc. [*Sporobolus cryptandrus* var. *strictus* Scribn.] Spike Dropseed. Perennial. 120, 159, 198
- Sporobolus cryptandrus* (Torr.) A. Gray. [*Agrostis cryptandra* Torr.] Spike Dropseed. Perennial. 135
- Sporobolus wrightii* Scribn. [*Epicampes crassiculmis* Piper] Big sacaton. Perennial. 138
- Urochloa arizonica* (Scribn. & Merr.) Morrone & F.Zuloaga. [*Panicum arizonicum* Scribn. & Merr.]. Arizona Signalgrass. Annual. 11

POLEMONIACEAE—PHLOX FAMILY

- Eriastrum diffusum* (A. Gray) H. Mason. Miniature Woollystar. Annual herb. 82

POLYGONACEAE—KNOTWEED FAMILY

- Eriogonum deflexum* Torr. Flatcrown Buckwheat. Annual herb. 97
- Eriogonum wrightii* Torr. ex Benth. [*Eriogonum helianthemifolium* Benth.] Bastardsage. Perennial herb. 164
- Rumex hymenosepalus* Torr. Canaigre Dock. Perennial herb. 67

RANUNCULACEAE—BUTTERCUP FAMILY

- Clematis drummondii* Torr. & A. Gray. Drummond's Clematis. Perennial twining climber (vine). 32

SANTALACEAE—SANDALWOOD FAMILY

- Phoradendron californicum* Nutt. Mesquite Mistletoe. Perennial/subshrub. 77

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SOLANACEAE–NIGHTSHADE FAMILY

Datura discolor Bernh. Desert Thorn-Apple. Annual herb. 10, 186

Lycium andersonii A. Gray. Anderson Wolfberry. Shrub. 148

**Nicotiana glauca* Graham. [*Siphaulax glabra* Raf.] Tree Tobacco. Shrub. 33

Nicotiana obtusifolia M. Martens & Galeotti. Desert Tobacco. Perennial/subshrub. 5

VERBENACEAE–VERBENA FAMILY

Glandularia gooddingii (Briq.) Solbrig. [*Verbena gooddingii* Briq.]. Southwestern Mock Vervain. Perennial herb. 72

ZYGOPHYLLACEAE–CALTROP FAMILY

Kallstroemia grandiflora Torr. ex A. Gray. Arizona Poppy. Annual herb. 124, 140

Larrea tridentata (Sessé & Moc. ex DC.) Coville. [*Larrea divaricata* subsp. *tridentata* (Sessé & Moc. ex DC.) Felger & Lowe] Creosote Bush. Shrub. 9

**Tribulus terrestris* L. Puncturevine. Annual herb. 20

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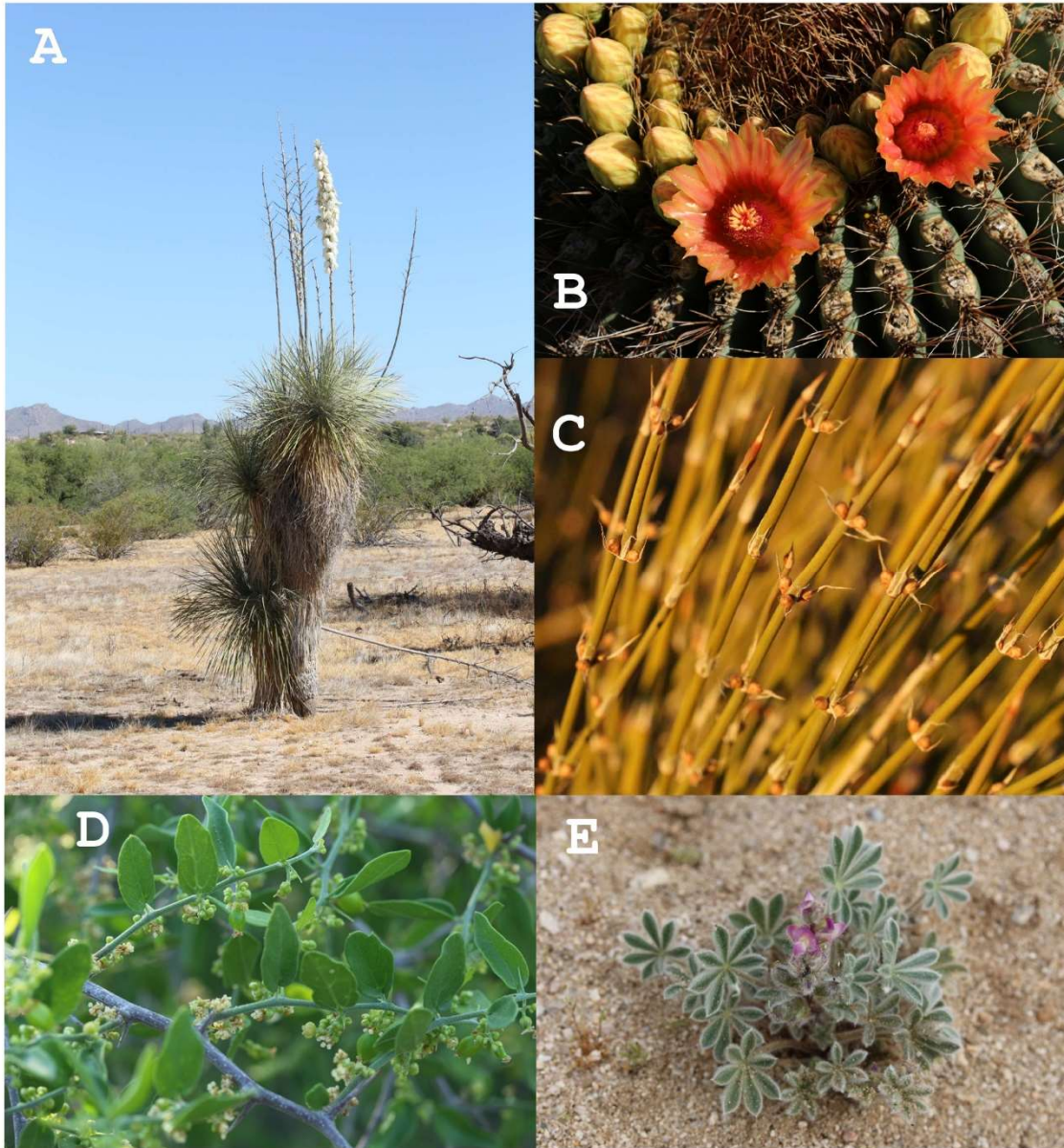


Figure 2. Some plants of the of Canada del Oro Flora. A. *Yucca elata*; B. *Ferocactus wislizeni*; C. *Ephedra trifurca*; D. *Celtis pallida*; E. *Lupinus concinnus*.

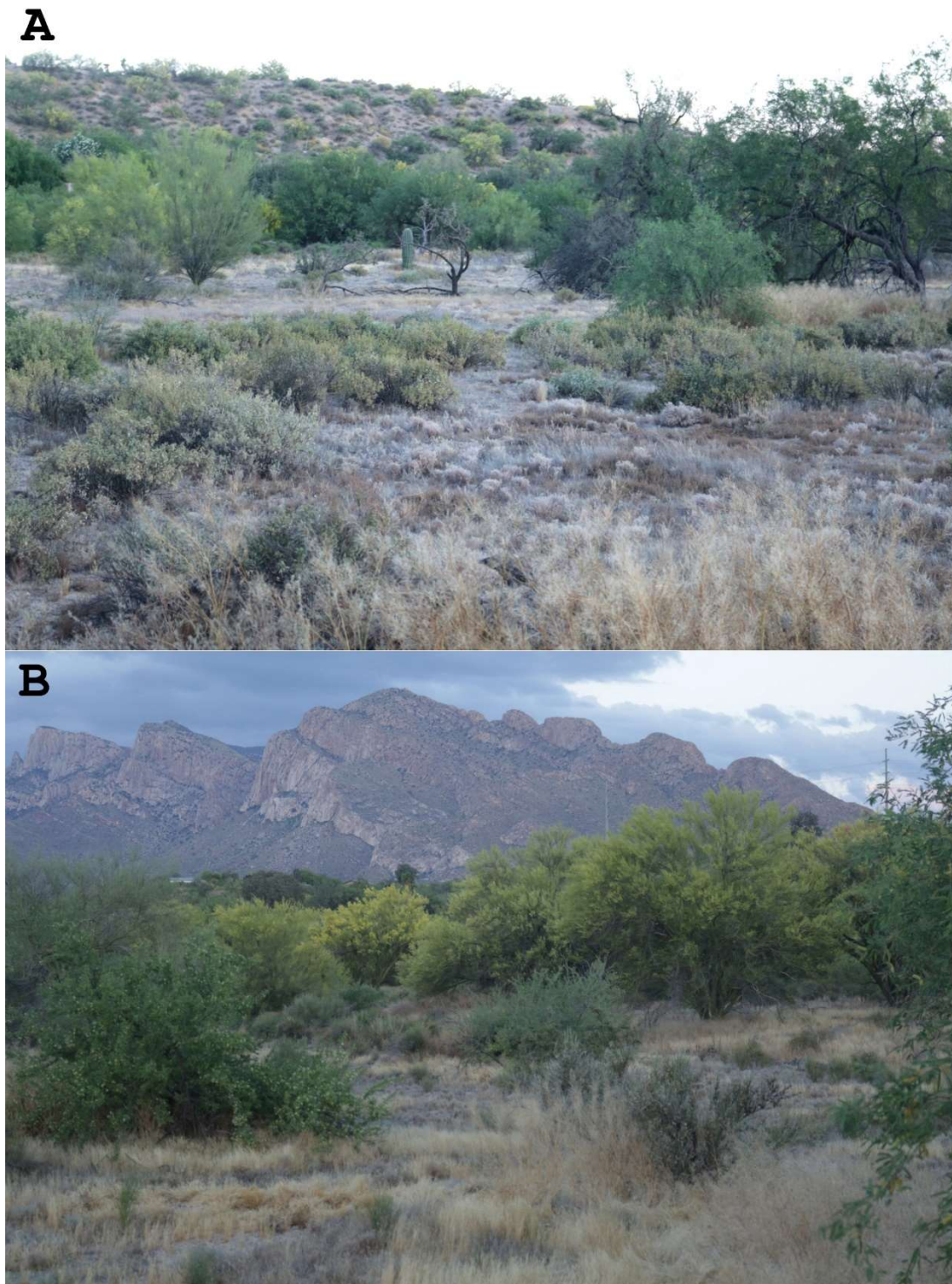


Figure 3. Habitat photos of Canada del Oro. A. Typical view of the study area with *Prosopis velutina*, Cactaceae, and Poaceae. (Hill beyond is not in the study area). B. View of the Santa Catalina Mountains to the east of the study area with several *Parkinsonia florida* in flower.