

Flora and Vegetation of Rock Horned Lizard (*Phrynosoma ditmarsii*) Sites, Rancho Las Playitas, Sonora, Mexico

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Abstract: The flora and vegetation were inventoried at six Rock Horned Lizard (*Phrynosoma ditmarsii*) sites on Rancho las Playitas near Bacoachi, Sonora, Mexico. A total of 137 plant species in 38 families was documented. Species richness was highest in Poaceae (22 species), Asteraceae (21 species), Fabaceae (15 species), Malvaceae (9 species), Euphorbiaceae (8 species), and Cactaceae (6 species). Rancho Las Playitas is in the transition zone between foothills thornscrub (tropical) and desert grassland (temperate). Rock Horned Lizard habitat is in foothills thornscrub on rocky slopes.



Figure 1. Male Rock Horned Lizard from Rancho Las Playitas near Bacoachi in breeding color in October 2021. Photo by Stephen F. Hale.

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INTRODUCTION

On the 1890-91 Carl Lumholtz Expedition to Mexico, a lizard with a flat body was collected with a locality recorded as “Sonora.” On the 1897 expedition, two more individuals were collected “a short distance over the border of Arizona, in old Mexico, state of Sonora”. In 1906, the Norwegian-born American herpetologist Leonhard Stejneger described the new lizard as *Phrynosoma ditmarsii* in honor of Raymond L. Ditmars, herpetologist at the New York Zoological Society (later the Bronx Zoo; Stejneger 1906; Figure 1). This animal, now known as the Rock Horned Lizard, was not found again for 73 years (Lowe et al. 1971). Even after 1972, it was known from only a few localities in Sonora. Since 2009, *P. ditmarsii* have been found in quite a few areas on Sky Island Alliance’s Madrean Archipelago Biodiversity Assessment and Greater Good Charities’ Madrean Discovery Expeditions (MDE) biotic inventory programs. It is now known from over 30 localities in Sonora (Turner et al. 2017, Aguilar-M. and Van Devender 2018). Here we present the local flora and characterize vegetation structure at six Rock Horned Lizard localities on Rancho Las Playitas west-southwest of Bacoachi, Sonora.

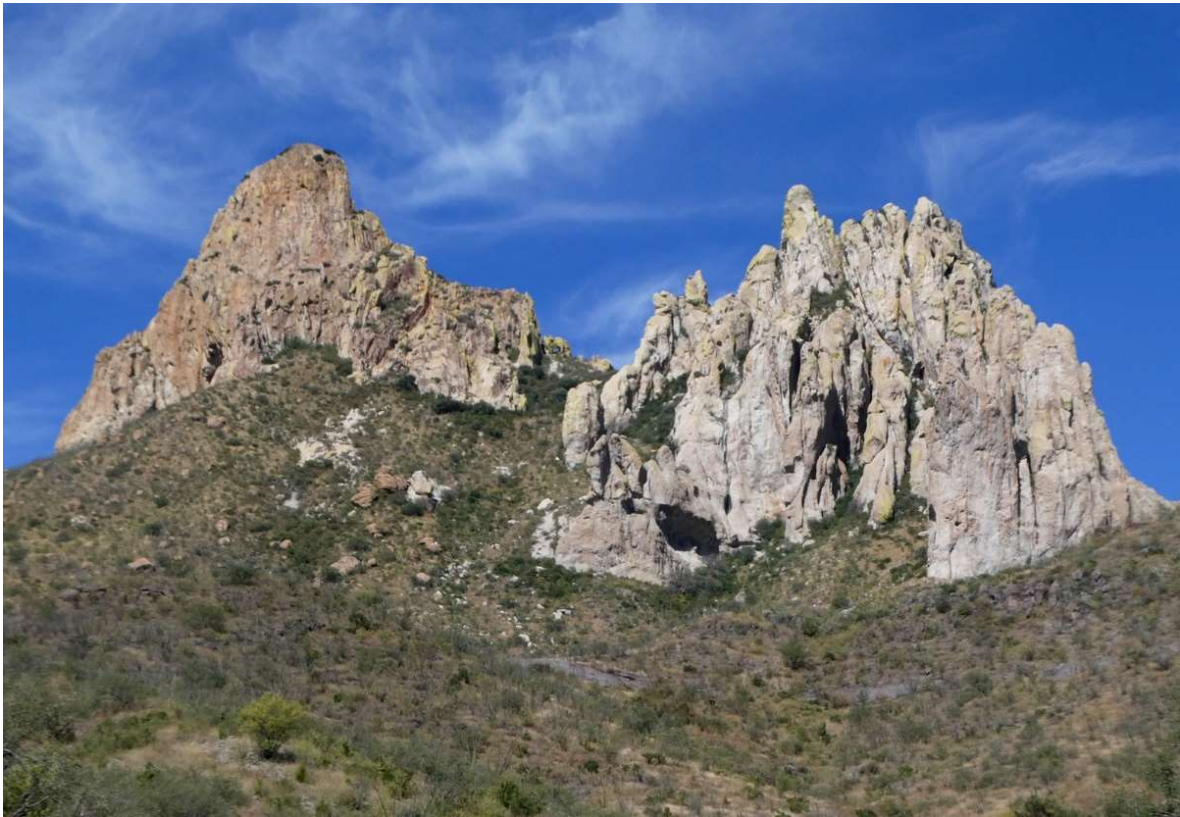


Figure 2. Picacho de Bacoachi. Photo by Ana L. Reina-Guerrero.

STUDY AREA

The MDE Expedition Rancho Las Playitas on September 27 to October 5, 2021, focused on studying the ecology of *P. ditmarsii*. The area is near the Picacho de Bacoachi (Figure 2) between the Ríos Sonora and Bacanuchi, 50 km south-southeast of Cananea and 86

km south of the Arizona border. The border between the municipalities of Arizpe and Bacoachi passes through the study area.

Three localities (Pd#1, Pd#3, and Pd#5) were close to Cerro Basaitequi at 1250-1300 m elev. Three localities (Pd#7, Pd#8, and Pd#11) were in the Arroyo Las Padercitas area at 1150-1210 m elev. Detailed plant lists were compiled on October 1-3, 2021. The coordinates are not presented here to protect *Phrynosoma ditmarsii*. There are 2593 observations in 430 taxa in the MDE database (madreandiscovery.org) in a 10 km search radius of a central point (30.57°N 110.12°W) in the six *P. ditmarsii* sites. Many of the records also have photo vouchers. Voucher specimens of most taxa were deposited in the herbaria of the University of Arizona (ARIZ) and the Universidad de Sonora (USON).



Figure 3. Basaitequi plants. A. *Lysiloma watsonii* (tepeguaje). Photo by A. L. Reina-G. B. *Capsicum annuum* (chiltepín). Photo by S. F. Hale. C. *Forestiera angustifolia* (desert olive). Photo by R. Wayne Van Devender. D. *Dryopetalon runcinatum* (rock mustard). Photo by S. F. Hale.

FLORA

A total of 137 plant species in 38 families were observed at the *P. ditmarsii* sites (Appendix 1). The families with the most species were Poaceae (22 species), Asteraceae (21 species), Fabaceae (15 species), Malvaceae (9 species), Euphorbiaceae (8 species), and Cactaceae (6 species). The life forms of the flora are trees (8), shrubs (20), woody vines (2), a

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woody parasite, subshrubs (19), rosette succulents (4), stem succulents (6), herbaceous perennials (20), annuals (35), perennial grasses (13), and annual grasses (9). Only four grasses (*Cynodon dactylon*, *Eragrostis cilianensis*, *Pennisetum ciliare*, and *Melinis repens*) were non-native species (2.9%), and of these, only the South American annual grass *E. cilianensis* was common. Although *P. ciliare* (buffelgrass) is a very serious invasive species in many areas in Sonora, only a few plants were seen. However, this subshrub grass has the potential to expand rapidly, burns often, and is a potential threat to the *P. ditmarsii* habitat. Woody plants were 36.5% of the flora, herbs were 56.2%, and succulents were 7.3%. Plants large enough to be structural dominants (trees, shrubs, and larger succulents) in the vegetation were 25.5%.

The flora and vegetation structure were very similar at the six *Phrynosoma ditmarsii* sites. There are 14-32 species of woody plants at the six *P. ditmarsii* sites (11-17 trees and shrubs, 2-14 subshrubs). The shrubs *Fouquieria splendens*, *Lysiloma watsonii* (Figure 3A), and *Prosopis velutina*, the woody vine *Nissolia schottii*, and the perennial grasses *Bouteloua curtipendula* and *B. diversispicula* were found at all six sites. The shrubs *Celtis pallida*, *Eysenhardtia orthocarpa*, *Fraxinus gooddingii*, and *Jatropha cardiophylla*, the stem succulent *Yucca madrensis*, and the perennial grasses *B. repens* and *Bothriochloa barbinodis* were observed at five sites. The shrubs and subshrubs *Abutilon abutiloides*, *Acalypha papillosa*, *Brickellia coulteri*, *Bursera fagaroides*, *Calliandra eriophylla*, *Dodonaea viscosa*, *Juniperus arizonica*, *Krameria erecta*, and *Mimosa dysocarpa*, the stem succulent *Cylindropuntia thurberi*, and the perennial grass *Heteropogon contortus* were seen at four sites. Site Pd#1 had more cover of the perennial grass *Bouteloua repens*, while site Pd#7 had a patch of *Agave schottii*.



Figure 4. Lush FTS vegetation in early October 2021 after generous summer monsoon rains on Cerro Basaitequi and ridge to the west. Picacho de Bacoachi is in the background. Photo by Charles Hedgcock.

Abutilon abutiloides, *Acalypha papillosa*, *Bursera fagaroides*, *Celtis pallida*, *Condalia correllii*, *Cylindropuntia thurberi*, *Eysenhardtia orthocarpa*, *Lysiloma watsonii*, and *Prosopis velutina* are typical FTS plants. Other FTS plants less common at the sites include *Capsicum annuum* (Figure 3B), *Commicarpus scandens*, *Erythrina flabelliformis*, *Lagascea decipiens*, *Randia sonorensis*, *Sarcomphalus obtusifolius*, and *Yucca madrensis*. Grassland species on the rocky slopes include *Calliandra eriophylla*, *Dalea pulchra*, *Dasyilirion wheeleri*, *Juniperus arizonica*, *Mimosa dysocarpa*, and *Salvia parryi*. *Quercus oblongifolia* is an oak woodland species at the lower end of its elevational range. *Forestiera angustifolia* (Figure 3C) and *Fraxinus gooddingii* are shrubs that are more common in northeastern Sonora and southeastern Arizona.

VEGETATION

Much of the Chihuahuan Desert from Chihuahua and western Texas west to southeastern Arizona and northeastern Sonora is a mosaic of desertscrub on rocky limestone slopes and desert grassland on deep soils in the adjacent valleys (Van Devender et al. 2013). The transition from foothills thornscrub (FTS) to desert grassland on Rancho Las Playitas is similar with rocky slopes dominated by shrubs and flatter areas by grasses. *Phrynosoma ditmarsii* lives on rocky slopes where the vegetation is more FTS (Figs 4 and 5). Plants large enough to provide shelter for *P. ditmarsii* among the rocks are *Lysiloma watsonii*, *Mimosa dysocarpa*, and *Prosopis velutina*, as well as *Celtis pallida*, *Cylindropuntia thurberi*, *Forestiera angustifolia*, *Fouquieria splendens*, *Fraxinus gooddingii*, and *Mariosousa millefolia*. *Lysiloma watsonii* is a tree in tropical deciduous forest in southern Sonora but grows as a shrub in FTS further north. *Lysiloma watsonii* reaches its northern distribution close to the Arizona border near Nogales, except for a disjunct population in the Rincon Mountains near Tucson, Arizona. In some areas in Sonora, it forms a distinct transitional vegetation between FTS and oak woodland. At Basaitequi, *L. watsonii* is transitional between FTS and desert grassland.



Figure 5. *Phrynosoma ditmarsii* FTS habitat at Basaitequi. Photo by Stephen L. Minter.

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The vegetation in lower areas in Basaitequi below the *Phrynosoma ditmarsii* habitat is relatively open desert grassland with fewer shrubs. Dominant perennial grasses are *Bouteloua chondrosioides*, *B. curtipendula*, *B. repens*, and *Bothriochloa barbinodis*. Shrubs in lowland habitats are *Aloysia gratissima*, *Baccharis sarothroides*, *B. thesioides*, and *Gymnosperma glutinosum*.

In the summer monsoon rainy season from July to September into October and November in fall, dense herbs and grasses between the shrubs provide cover and shade on the rocky slopes. Especially common are annual herbs and vines (*Amaranthus palmeri*, *Eriogonum abertianum*, and *Ipomoea costellata*), perennial grasses (*Bouteloua curtipendula*, *B. repens*, and *Heteropogon contortus*), and annual grasses (*B. aristidoides*, *B. barbata*, *Eragrostis cilianensis*, and *Panicum alatum*). The last flowers were seen in December on *Gymnosperma glutinosum*, *Plumbago zeylanica*, and *Viguiera dentata*. In February after a few modest rains, there were new leaves on *Ambrosia confertiflora*, *Bouteloua repens*, and some *Fouquieria splendens*, and flowers on *Dalea pulchra* and *Sida abutilifolia*. The spring annuals *Descurainia pinnata*, *Drypetalon runcinatum* (Figure 3D), and *Phacelia distans* were growing in shady areas.

A diverse insect fauna feeds on the plants from late summer into October and November. These insects are a rich food source for *Phrynosoma ditmarsii* during the fall breeding season, especially the diverse species of grasshoppers. Gradually the abundance of grasshoppers and butterflies declined in December. Later only a few small young grasshoppers and adult butterflies were still present. The activity patterns of *P. ditmarsii* tracked the insect fauna.

ACKNOWLEDGMENTS

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APPENDIX 1. Plants at Rock Horned Lizard sites. * = non-native. PV = photo voucher in MDE database record, each observation is listed by its Catalog Number, e.g., MDE-53227.

Acanthaceae

- Elytraria imbricata* (Vahl) Pers. (PV: MDE-53227; *Van Devender 2021-437*, USON)
- Ruellia ciliatiflora* Hook. (*Hale 6508*, ARIZ)
- Tetramerium nervosum* Nees (PV: MDE-53462; *Van Devender 2021-405*, USON)

Amaranthaceae

- Amaranthus palmeri* S. Watson (*Reina-G. 2022-251*, USON)
- Chenopodium neomexicanum* Standl. (*Reina-G. 2022-127*, USON)
- Gomphrena sonora* Torr. (PV: MDE-53278; *Van Devender 2021-442*, USON)
- Guilleminea densa* (Willd.) Moc. (*Van Devender 2021-372*, USON)

Apocynaceae

- Mandevilla brachysiphon* (Torr.) Pichón (PV:MDE-54693; *Reina-G. 244*, ARIZ, USON)

Aristolochiaceae

- Aristolochia watsonii* Wooton & Standl. (PV: MDE-53105; *Van Devender 2022-172*, ARIZ)

Asparagaceae

- Agave schottii* Engelm. (PV: MDE-55812; *Van Devender 2022-174*, ARIZ, USON)
- Dasyllirion wheeleri* S. Watson ex Rothr. (PV: MDE-53211; *Van Devender 2022-195*, ARIZ, USON)
- Nolina microcarpa* S. Watson (PV: MDE-54878; *Van Devender 2022-192*, ARIZ, USON)
- Yucca madrensis* Gentry (PV: MDE-53484; *Reina-G. 2022-90*, ARIZ, USON)

Asteraceae

- Acourtia thurberi* (A. Gray) Reveal & R.M. King (*Van Devender 2021-420*, USON)
- Adenophyllum porophyllum* (Cav.) Hemsl. (*Van Devender 2021-439*, ARIZ, USON)
- Ambrosia confertiflora* DC. (PV: MDE-53089)
- Artemisia ludoviciana* Nutt. (*Van Devender 2021-412*, USON)
- Baccharis thesioides* Kunth (*Van Devender 2021-448*, ARIZ, USON)
- Brickellia coulteri* A. Gray (*Reina-G. 2022-84*, ARIZ, USON)
- Encelia farinosa* A. Gray (*Reina-G. 2022-98*, ARIZ, USON)
- Gymnosperma glutinosum* (Spreng.) Less. (PV: MDE-53284; *Van Devender 2021-367*, ARIZ, USON)
- Lagascea decipiens* Hemsl. (*Van Devender 2021-497*, ARIZ)
- Machaeranthera tagetina* Greene (PV: MDE-53327; *Van Devender 2021-424*, USON)
- Melampodium appendiculatum* B.L. Rob. (*Van Devender 2021-425*, USON)
- Pectis prostrata* Cav. (PV: MDE-53388; *Van Devender 2021-443*, ARIZ)
- Porophyllum gracile* Benth. (*Reina-G. 2022-81*, ARIZ)
- Porophyllum macrocephalum* DC. (PV: MDE-53400; *Van Devender 2019-629*, USON)
- Senecio flaccidus* Less. (PV: MDE-54751; *Hale 6547*, ARIZ)
- Tithonia thurberi* A. Gray (*Van Devender 2021-411*, USON)
- Trixis californica* Kellogg (*Van Devender 2021-378*, ARIZ, USON)
- Viguiera dentata* (Cav.) Spreng (PV: MDE-53477; *Van Devender 2021-421*, USON)

- Xanthisma gracile* (Nutt.) D.R. Morgan & R.L. Hartm. (*Reina-G.-670*, USON)
Zinnia peruviana (L.) L. (*Reina-G. 2021-471*: USON)
Zinnia zinnioides (Kunth) Olorode & A.M. Torres (PV: MDE-53489; *Reina-G.2021-421*, USON)
- Boraginaceae
Phacelia distans Benth. (PV: MDE-54305; *Reina-G. 2022-94*, ARIZ, USON)
- Brassicaceae
Descurainia pinnata (Walter) Britton (*Reina-G. 2022-07*, DES)
Dryopetalon runcinatum A. Gray (*Reina-G. 2022-08*, ARIZ, USON)
- Burseraceae
Bursera fagaroides (Kunth) Engl. var. *elongata* McVaugh & Rzed. (PV: MDE-53159; *Van Devender 2021-381*, ARIZ, USON)
- Cactaceae
Cylindropuntia thurberi (Engelm.) F.M. Knuth (PV: MDE-53199; *Van Devender 2022-188*, ARIZ, CDIIR, MEXU)
Mammillaria grahamii Engelm. ssp. *grahamii* (PV: MDE-53334; *Reina-G. 2021-511*, ARIZ, CDIIR, MEXU)
Opuntia chlorotica Engelm. & Bigel. (PV: MDE-55519; *Reina-G. 2022-184*, ARIZ, CDIIR, MEXU)
Opuntia aff. *durangensis* Britton & Rose (PV: MDE-53379; *Van Devender 2021-515*, ARIZ, CDIIR, MEXU)
Opuntia aff. *wilcoxii* Britton & Rose (PV: MDE-53380; *Van Devender 2022-186*: ARIZ, CDIIR, MEXU)
Stenocereus thurberi (Engelm.) F. Buxb. (PV: MDE-53454; *Reina-G. 2021-512*, ARIZ, CDIIR, MEXU)
- Cannabaceae
Celtis pallida Torr. (PV: MDE-53169; *Van Devender 2022-168*, USON)
Celtis reticulata Torr. (PV: MDE-53172; *Van Devender 2022-169*, USON)
- Convolvulaceae
Evolvulus alsinoides L. var. *angustifolia* Torr. (PV: MDE-52355; *Van Devender 2021-392*, USON)
Ipomoea costellata Torr. (*Hale 6494*, ARIZ)
Ipomoea cristulata Hallier f. (PV: MDE-53299; *Reina-G. 20-22-373*, ARIZ)
Ipomoea ternifolia Cav. var. *leptotoma* (Torr.) J.A. McDonald (PV: MDE-53301; *Reina-G. 2022-354*)
- Cupressaceae
Juniperus arizonica (R.P. Adams) R.P. Adams (PV: MDE-53308; *Reina-G. 2022-137*, ARIZ)
- Euphorbiaceae
Acalypha neomexicana Müll. Arg. (*Van Devender 2021-435*, USON)
Acalypha ostryifolia Riddell (*Van Devender 2021-414*, ARIZ)
Acalypha papillosa Rose (*Carnahan 3841*, ARIZ)
Euphorbia heterophylla L. (*Van Devender 2021-388*, USON)
Euphorbia hirta L. (PV: MDE-53249; *Van Devender 2021-494*, ARIZ)
Euphorbia hyssopifolia L. (*Van Devender 2021-387*, USON)

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Jatropha cardiophylla (Torr.) Müll. Arg. (PV: MDE-53303; *Van Devender 2022-205*, USON)

Tragia nepetifolia Cav. var. *dissecta* Müll. Arg. (*Van Devender 2021-382*, ARIZ)

Fabaceae

Calliandra eriophylla Benth. (PV: MDE-53162; *Reina-G. 2022-128*, USON)

Chamaecrista nictitans (L.) Moench (*Van Devender 2021-409*, USON)

Crotalaria pumila (Rose) Lavin (PV: MDE-53190; *Van Devender 2021-413*, USON)

Dalea pringlei A. Gray (*Van Devender 2021-417*, USON)

Dalea pulchra Gentry (PV: MDE-53209; *Reina-G. 2022-04*, ARIZ)

Desmanthus bicornutus S. Watson (PV: MDE-53214; *Van Devender 2021-375*, USON)

Erythrina flabelliformis Kearney (PV: MDE-53245; *Van Devender 2022-173*, ARIZ, USON)

Eysenhardtia orthocarpa (A. Gray) S. Watson (PV: MDE-53258; *Van Devender 2022-164*, ARIZ, USON)

Lysiloma watsonii Rose (PV: MDE-53322; *Reina-G. 2022-131*, ARIZ)

Mariosousa millefolia (S. Watson) Seigler & Ebinger (*Hale 6524*, ARIZ)

Mimosa dysocarpa Benth. ex A. Gray (PV: MDE-53352; *Hale 6531*, ARIZ)

Nissolia schottii (Torr.) A. Gray (PV: MDE-53370; *Van Devender 2021-418*, USON)

Prosopis velutina Wooton (*Reina-G. 2022-105*, ARIZ, USON)

Senegalia occidentalis (Rose) Britton & Rose (PV: MDE-55913)

Vachellia farnesiana (L.) Wight & Arn. (*Van Devender 2022-171*, ARIZ, USON)

Fagaceae

Quercus oblongifolia Torr. (PV: MDE-53419; *Reina-G. 2022-350*, USON)

Fouquieriaceae

Fouquieria splendens Engelm. (PV: MDE-53267; *Reina-G. 2022-97*, USON)

Krameriaceae

Krameria erecta Willd. ex Schult. (*Van Devender 2021-430*, USON)

Lamiaceae

Salvia parryi A. Gray (*Reina-G. 2022-78*, ARIZ, USON)

Salvia subincisa Benth. (*Hale 6522*, ARIZ)

Loasaceae

Mentzelia albicaulis (Douglas) Douglas ex Torr. & A. Gray (*Reina-G. 2022-358*, USON)

Malpighiaceae

Cottsia californica (Benth.) W.R. Anderson & C. Davis (*Reina-G. 2022-248*, ARIZ)

Malvaceae

Abutilon abutiloides (Jacq.) Garcke ex Britton & Wilson (PV: MDE-54742; *Van Devender 2021-383*, USON)

Abutilon incanum (Link) Sweet (*Van Devender 2021-377*, USON)

Anoda cristata (L.) Schltdl. (PV: MDE-29470; *Van Devender 2021-431*, USON)

Ayenia filiformis S. Watson (*Van Devender 2021-428*, USON)

Corchorus hirtus L. (*Van Devender 2021-487*, ARIZ)

Gossypium thurberi Todaro (*Van Devender 2021-366A*, USON)

Hibiscus aciularis Standl. (PV: MDE-54536; *Reina-G. 2022-75*, ARIZ)

Malvastrum bicuspidatum (S. Watson) Rose (*Van Devender 2021-374*, USON)

- Waltheria indica* L. (*Van Devender 2021-373*, ARIZ, USON)
- Martyniaceae
Proboscidea parviflora (Wooton) Wooton & Standl. (PV: MDE 53407; *Reina-G. 2022-309*, ARIZ)
- Montiaceae
Phemeranthus aurantiacus (Engelm.) Kiger (*Reina-G. 2022-248*, ARIZ, USON)
- Nyctaginaceae
Boerhavia coccinea Mill (*Reina-G. 2022-250*, USON)
Boerhavia erecta L. (*Van Devender 2021-408*, USON)
Commicarpus scandens (L.) Standl. (*Hale 6557*, ARIZ)
- Oleaceae
Forestiera angustifolia Torr. (PV: MDE-53264; *Van Devender 2021-455*, ARIZ)
Fraxinus gooddingii Little (PV: MDE-53273; *Van Devender 2022-166*, USON)
- Petiveriaceae
Rivina humilis L. (*Van Devender 2021-451*, USON)
- Plumbaginaceae
Plumbago zeylanica L. (PV: MDE-55719; *Van Devender 2022-155*, ARIZ)
- Poaceae
Aristida adscensionis L. (*Van Devender 2021-396*, USON)
Aristida ternipes Cav. var. *ternipes* (*Van Devender 2021-432*, ARIZ)
Bothriochloa barbinodis (Lag.) Herter (*Van Devender 2021-394*, ARIZ)
Bouteloua aristidoides (Kunth) Griseb. (*Van Devender 2019-688*, ARIZ, USON)
Bouteloua barbata Lag. var. *barbata* (*Van Devender 2021-434*, ARIZ)
Bouteloua chondrosioides (Kunth) Benth. ex S. Watson (*Van Devender 2021-423*, ARIZ)
Bouteloua curtispindula (Michx.) Torr. (*Van Devender 2019-635*, USON)
Bouteloua diversispicula Columbus (*Van Devender 2021-440*, ARIZ)
Bouteloua repens (Kunth) Scribn. & Merr. (*Van Devender 2021-386*, ARIZ, MEXU, USON)
Chloris virgata Sw. (*Van Devender 2021-401*, ARIZ)
**Cynodon dactylon* (L.) Pers. (*Van Devender 2022-159*; ARIZ, USON)
Dinebra panicea (Retz.) P.M. Peterson & N. Snow subsp. *brachiata* (Steud.) P.M. Peterson & N. Snow (*Van Devender 2021-428*, USON)
Disakisperma dubium (Kunth) P.M. Peterson & N. Snow (*Van Devender 2021-389*, ARIZ)
Enneapogon desvauxii P. Beauv. (*Van Devender 2021-447*, ARIZ)
**Eragrostis cilianensis* (All.) Link ex Vignolo (*Van Devender 2021-436*, ARIZ)
Heteropogon contortus (Elliott) Benth. (*Van Devender 2021-376*, ARIZ, USON)
**Melinis repens* (Willd.) Zizka (PV: MDE-53348; *Van Devender 2021-390*, USON)
Muhlenbergia microsperma (DC.) Kunth (*Van Devender 2021-427*, USON)
Panicum alatum Zuloaga & Morrone (*Van Devender 2021-398*, ARIZ)
**Pennisetum ciliare* (L.) Link (PV: MDE-53390; *Hale 6538*, ARIZ)
Setaria grisebachii E. Fourn. (*Reina-G. 2021-460*, ARIZ)
Setaria macrostachya Kunth (*Van Devender 2021-369*, ARIZ, USON)
- Polygonaceae
Eriogonum abertianum Torr. (PV; *Van Devender 2021-433*, USON)

FLORA AND VEGETATION OF ROCK HORNED LIZARD (*PHRYNOSOMA DITMARSI*)
SITES

Portulacaceae

Portulaca oleracea L. (*Reina-G.* 2922-355, USON)

Pteridaceae

Myriopteris lindheimeri (Hook.) J. Sm. (PV: MDE-54340; MDE-54340; *Van Devender* 2022-306, ARIZ)

Rhamnaceae

Adolphia infesta (Kunth) Meisn. (*Carnahan* 3838, ARIZ)

Condalia correllii M.C. Johnst. (*Reina-G.* 2022-112, ARIZ, USON)

Sarcophalus obtusifolius (Hook. ex Torr. & A. Gray) Hauenschield (*Van Devender* 2022-204, ARIZ, USON)

Rubiaceae

Mitracarpus hirtus (L.) DC. (*Van Devender* 2021-404, USON)

Randia sonorensis Wiggins (PV: MDE-53422; *Van Devender* 2021-444, ARIZ)

Santalaceae

Phoradendron californicum Nutt. (*Van Devender* 2021-507, USON)

Sapindaceae

Dodonaea viscosa Jacq. var. *angustifolia* (L.f.) Benth. (*Reina-G.* 2022-132, USON)

Selaginellaceae

Selaginella rupicola Underw. (PV: MDE-55810; *Van Devender* 2022-198, TEX, USON)

Solanaceae

Capsicum annuum L. var. *glabriusculum* (Dunal) Heiser & Pickering (PV: MDE-53165; *Van Devender* 2021-422, ARIZ)

Solanum lumholtzianum Bartlett (PV: MDE-53447; *Van Devender* 2021-384, USON)

Verbenaceae

Aloysia gratissima (Gillies & Hook.) Tronc. (*Reina-G.* 2022-93, USON)

Bouchea dissecta S. Watson (PV: MDE-53130; *Reina-G.* 2021-472, TEX)

Zygophyllaceae

Kallstroemia grandiflora Torr. ex A. Gray (PV: MDE-53313; *Reina-G.* 2022-240, USON)