

VASCULAR PLANTS OF NORTHERN DEATH VALLEY NATIONAL PARK
(DEATH VALLEY, LAST CHANCE RANGE, AND EUREKA VALLEY), INYO COUNTY, CALIFORNIA

HESTER L. BELL^{1,3}, SARAH J. DE GROOT^{1,4}, AND STEVE E. SCHOENIG²

¹California Botanic Garden, 1500 North College Avenue, Claremont, California 91711;

²UC Davis Center for Plant Diversity, 1026 Science Laboratory Building, 505 Hutchison Drive, Davis, California 95616

³Corresponding author (hbell@rsabg.org)

⁴Current address: 10678 Cerveza Drive, Escondido, California 92026 (xylococcus@gmail.com)

ABSTRACT

The northern portion of Death Valley National Park closely (but not entirely) corresponds to the northernmost portion of the Mojave Desert in California. From 2014 through 2019 we surveyed the vascular plants in the Eureka Valley, northern Last Chance Range, and northern Death Valley. This study area covers 1735 sq km and ranges in elevation from 810 to 2577 m; it contains the tallest sand dunes in California, a calcium-rich mountain range, and alkaline seeps. These features provide specialized habitats for narrowly and regionally endemic plants. Fossil data from packrat middens suggest that the local climate has become warmer and drier during the Holocene and the assemblage of plants currently observed has only been in place for a few thousand years. During six years of fieldwork, we documented 542 specimens of minimum-rank taxa, including 51 special concern taxa and 25 non-natives. We were unable to relocate 45 taxa known from historic collections. Fifty-one collections were the first for the study area; these include 24 range extensions. Observations from our collections are combined with those from historic collections and other collectors in an annotated checklist.

Key words: calcareous substrates, Death Valley National Park, endemic plants, Eureka Valley, Last Chance Range, Mojave Desert, rare plants.

INTRODUCTION

The Desert Protection Act (DPA) of 1994 (U.S. Congress 2020) abolished Death Valley National Monument and, in its place, established an expanded Death Valley National Park. The lands of the National Monument were subsumed into the new National Park and the boundaries were expanded to the north and west to include the northern portion of Death Valley, Last Chance Range, and most of Eureka Valley, the Saline Range, and Saline Valley. This study is a floristic survey of a portion of the area brought under National Park Service protection by the DPA: northern Death Valley, the northern Last Chance Range, and Eureka Valley.

Death Valley National Park (DVNP) is the largest national park (13,650 sq km) within the continental United States. It occupies the eastern half of Inyo County, California (CA), a small portion of San Bernardino County, CA, as well as a triangle of Esmeralda County, Nevada, that provides access to Titus Canyon (south of the study area). The northern and eastern boundary of DVNP follows the California-Nevada border and northern edge of Last Chance Range (LCR) with Willow Spring Road as the boundary. The northern extent of Death Valley lies to the east of LCR. To the west, most of Eureka Valley (EV) falls within DVNP; the northwest corner of the Eureka Valley is in Piper Mountain Wilderness managed by the Bureau of Land Management (BLM). Death Valley, EV, and LCR are part of the

Basin and Range topography that covers most of Nevada and eastern California (Eaton 1982).

The study area encompasses this northern portion of DVNP as well as the northwest corner of the EV (Fig. 1). This area nearly corresponds to the northern limits of the Mojave Desert Region and Desert Mountains Subregion of the Desert Province within California (Baldwin et al. 2012) and is bordered by Great Basin Province to the north and west. The Mojave Desert Region continues into Nevada to the east.

The study area covers an area of 1735 sq km. The highest elevation is Last Chance Mountain (called Whitetop by some collectors, because of a patch of white limestone at its summit) at 2577 m and the lowest (810 m) is to the east of LCR in Death Valley. The lowest elevation in EV is the saline playa (877 m) to the west of the main Eureka Dunes. The northern end of Eureka Valley is about 600 m higher and gradually drops in elevation toward the south. Notable features include the Eureka Dunes (south end of the Eureka Valley), a series of seeps and springs associated with the Death Valley-Furnace Creek Fault Zone east of LCR (Strand 1967; McKee 1985; Wrucke and Corbett 1990), and the complex geology (carbonates, basalts, sedimentary formations, sulfur deposits) of LCR. These factors have produced a rich flora that includes narrow endemics (*Astragalus lentiginosus* var. *micans*, *Boechera yorkii*, *Eriogonum gilmanii*, *Oenothera californica* subsp. *eurekensis*, *Swallenia alexandrae*) as well as a number of regional endemics that are restricted to Inyo County and adjacent counties in Nevada.

The goal of the present study is to summarize previous collection work and to document the occurrences and distribution of vascular plants during the period of 2014 through 2019. The results of this project are presented in an annotated checklist (Appendix 1).

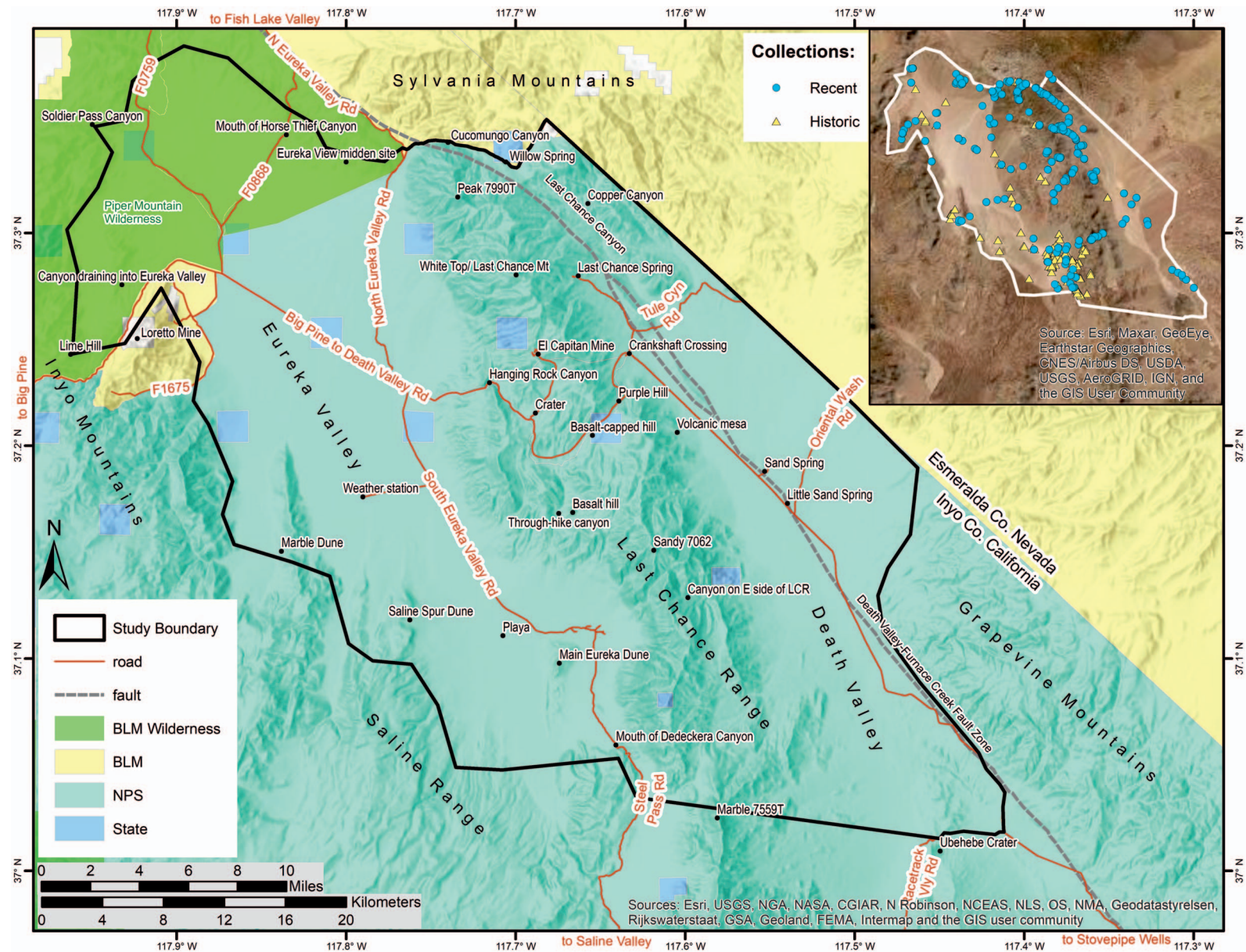


Fig. 1. Map of Eureka Valley, northern Last Chance Range and northern Death Valley, showing main roads, features, and land management. Plant collection sites are shown on the inset satellite image at upper right. Recent collections (by us or others) were made during 1990 or later; historic collections are from before 1990. Locality data were obtained from georeferenced specimen records in the Consortium of California Herbaria (CCH1/2 2021) online data base. Feature names and peak elevations were obtained from USGS topographic quadrangle maps; some place names for collection localities are informal. The Death Valley-Furnace Creek fault zone was drawn based on the Geologic map of California (Jennings et al. 2010). Map created in Esri® ArcMap™ 10.7.1.11595. Map base layers were open source or included with the software; sources: Bureau of Land Management (Land Status geodatabase version 10, 2019), Owlshhead GPS (roads), <http://owlshheadgps.com/> but original sources from public land management agencies), Esri (World Hillshade and World Imagery basemaps, credits on maps).

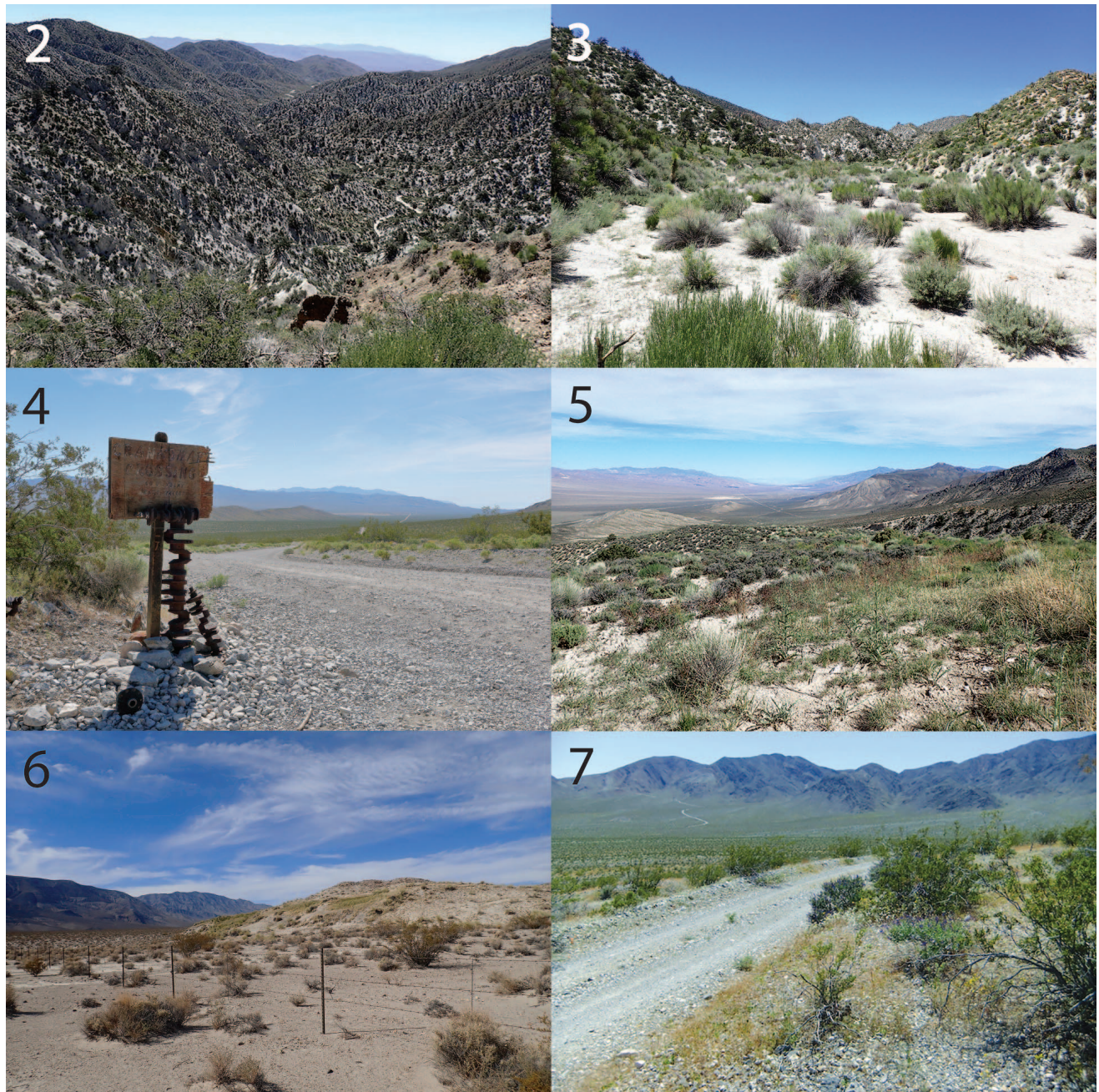


Fig. 2–7. Northern Death Valley and Last Chance Canyon.—2. View south from the head of Last Chance Canyon, slightly south of Cucomungo Canyon, with pinyon-juniper woodland.—3. View north from the middle of Last Chance Canyon, with mixed desert scrub with Joshua trees and pinyon-juniper woodland.—4. View south from Crankshaft Crossing with creosote bush scrub.—5. View south from near the mouth of the canyon to Last Chance Spring with blackbrush scrub.—6. Sand Spring, alkaline seep surrounded by sparse creosote bush scrub.—7. Big Pine to Death Valley Road on east side of Last Chance Range (view from Tule Canyon Road). Photos: Hester Bell, Fig. 4, 6, 7; Sarah De Groot, Fig. 2, 3, 5.

PHYSICAL SETTING

Geography and Road Access Within the Study Area

The study area encompasses the northern portion of DVNP and EV, including the northwest portion of the valley that falls within Piper Mountain Wilderness, Fig. 1. The National Park boundaries define the eastern and northern boundaries (Willow Spring Road between the LCR and Sylvania Mountains Wilderness). The edges of EV up to approx-

imately 1250 m from the northwestern, western, and southern boundaries (to Dedeckera Canyon). The intersection of the Big Pine to Death Valley Road with Racetrack Valley Road (essentially 37° N latitude) is the southern boundary of the study area (excluding the hills north of Scotty's Castle).

There are relatively few roads in the study area (Fig. 1); all roads are dirt except for a short portion of the Big Pine to Death Valley Road (BP-DV).

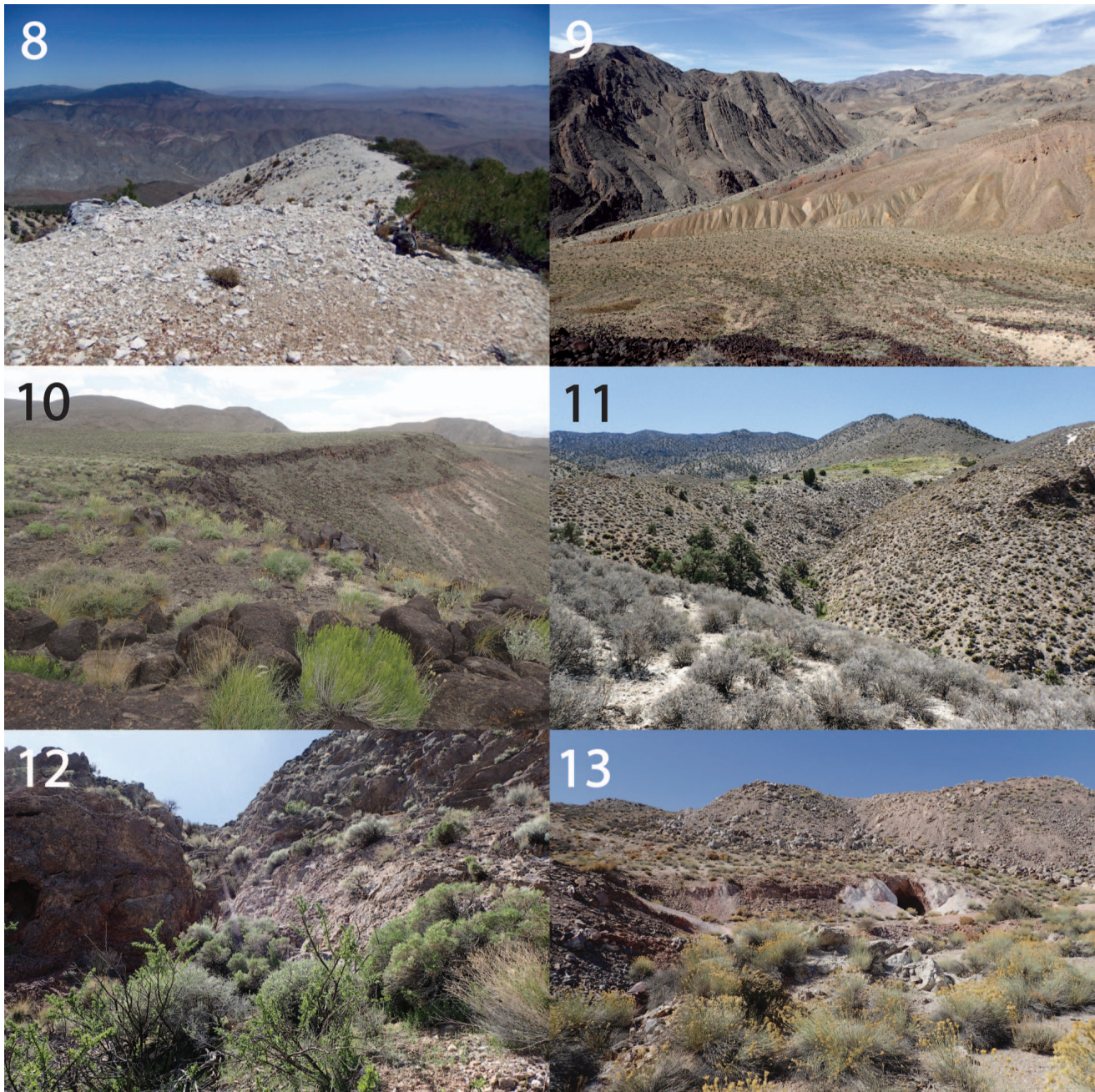


Fig. 8–13. Last Chance Range.—8. View to the east of exposed limestone at summit of Last Chance Mountain (Whitetop), stunted pinyon-juniper woodland on the south-facing slope.—9. View to east from a basalt-capped hill (foreground) south of Crater; on the left: tilted limestone formations; on the right: eroded sedimentary hills.—10. Volcanic mesa just south of Big Pine–Death Valley Road with desert scrub.—11. Seep southeast of Last Chance Spring with blackbrush scrub and patches of pinyon-juniper woodland.—12. Calcareous rock outcrop with typical vegetation including *Buddleja utahensis* and *Glossopetalon spinescens*.—13. Main shaft of El Capitan Mine north of Crater, surrounded by desert scrub dominated by *Ericameria nauseosa*. Photos: Sarah De Groot.

Previous Collectors in the Study Area

The history of botanical exploration in the study area is relatively short. There is no evidence that either Coville (1893) or Gilman (associated with Death Valley National Monument) collected in the study area. Most collecting efforts occurred primarily during the 1950s and 1970s and have focused on the Eureka Dunes and the western slopes of LCR, especially Dedeckera

Canyon, as well as Sand Spring in the northern portion of Death Valley. Most notably, Mary DeDecker collected in the area and produced the comprehensive flora (DeDecker 1984).

We obtained information about previous collecting in the study area from the Consortium of California Herbaria database (CCH1/2 2021). Aside from two collections made in 1927, the oldest herbarium specimens from the study area were collected by Annie Alexander and Louise Kellogg, field biologists, on

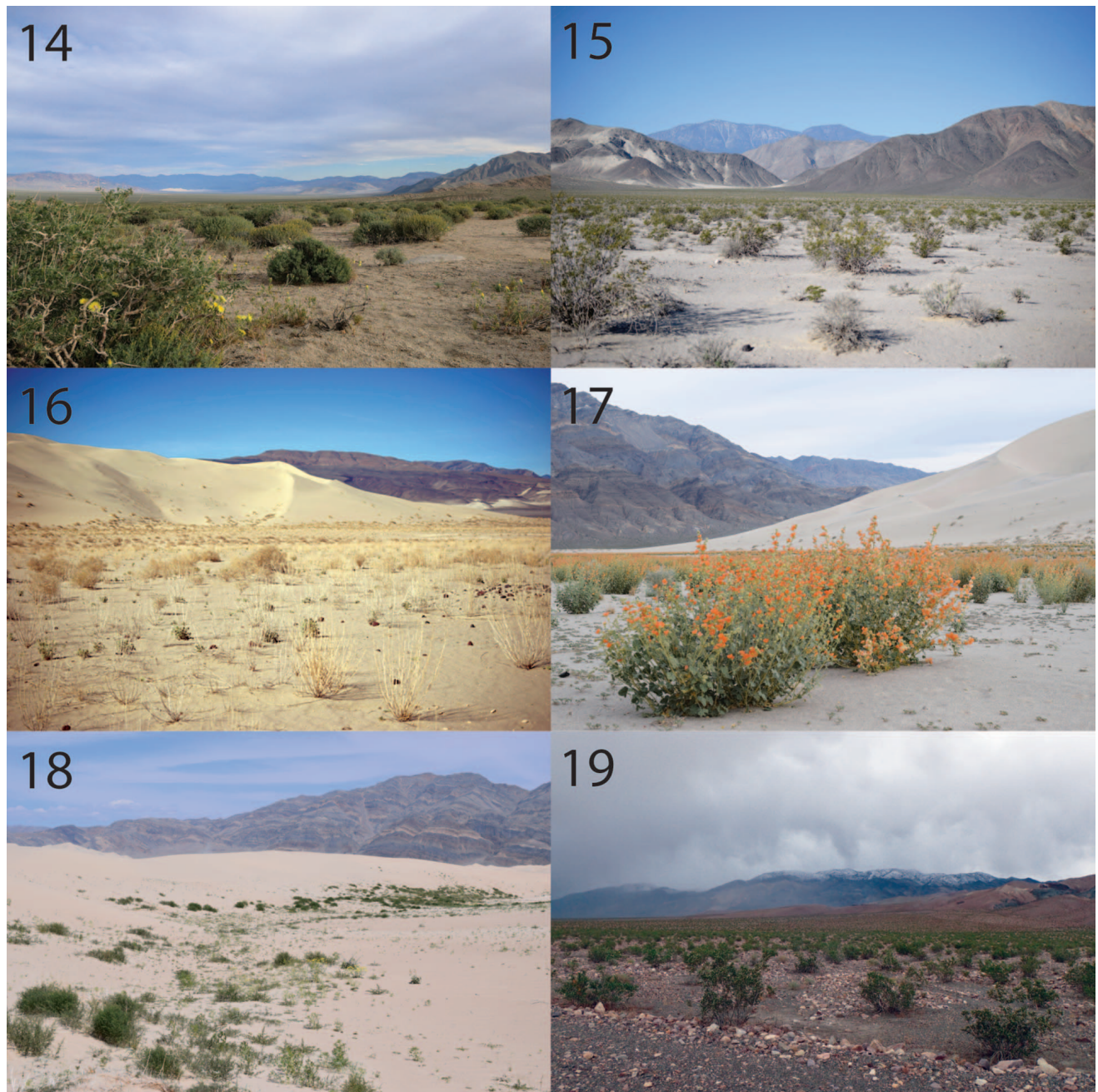


Fig. 14–19. Eureka Valley.—14. View of Eureka Valley from the north looking toward the main Eureka Dune in far distance.—15. View to the west toward Marble Dune in a notch in the Saline Range. Inyo Mountains are in background.—16. View to the north from the east side of main Eureka Dune in April 2016 after a dry fall and winter.—17. View to the south from the east side of main Eureka Dune in April 2014 after adequate fall and winter rains, with abundant *Sphaeralcea ambigua*.—18. View to the north from south end of the main Eureka Dune, dark green bushes are *Salsola paulsenii* (note stratifications on Last Chance Range).—19. Snow on Last Chance Range, May 2019. Photos: Hester Bell, Fig. 15–18; Sarah De Groot, Fig. 19; Deborah Woo, Fig. 14.

trips in 1947 and 1949. They collected at Sand Spring on the eastern side of LCR and also at the main Eureka Dunes. Notably, they made the first scientific collection of *Swallenia alexandrae* (the Eureka Valley dune grass), named for Annie Alexander. In the mid-1950s, Philip A. Munz, director of Rancho Santa Ana Botanic Garden (and authority on Onagraceae), and John C. Roos, a medical doctor from Loma Linda Hospital, collected

(both together and separately) in the study area. Drs. Munz and Roos recognized the distinct character of *Oenothera californica* subsp. *eurekensis*, a rare, narrow endemic found only on dunes in the Eureka Valley. Bruce Pavlik (1979, 1988) studied the phytogeography of California dunes and was an effective advocate for protection of the Eureka Dunes. Christopher Davidson, Dean Taylor, James Morefield, and James André have all col-

Table 1. Previous collectors in the Eureka Valley and northern Death Valley National Park based upon CCH records.

Collector	Years of active collecting
Annie Alexander/Louise Kellogg	1947, 1949
Phillip A. Munz	1954, 1955
John C. Roos	1954, 1955
Mary DeDecker	Primarily 1970s–1980s
Christopher Davidson	1976
Dean W. Taylor	1977–1979
Bruce M. Pavlik	1977–1980
James D. Morefield	1986, 1987
Dana York	2000, 2001
James M. André	2014

lected in the EV and LCR and have contributed many specimens to herbaria throughout the state (Table 1). Dana York, DVNP botanist from 1999 to 2004, added many specimens from the study area to the park herbarium (DEVA) during 2000 and 2001. He made the first collection of a new species of *Boechea* from the LCR that was named *Boechea yorkii* in his honor (Boyd 2004). In addition, the California Native Plant Society (CNPS), and particularly, its Bristlecone Chapter, have hosted many field trips to the study area, especially the Eureka Dunes.

The most influential collector in the northern Mojave Desert was Mary DeDecker who made innumerable contributions to the knowledge of California plants and conservation of critical desert habitats. Her work was vitally important to the protection of the Eureka Dunes and to the expansion of Death Valley National Monument to include most of the EV and LCR (and elevation to a National Park). Mary DeDecker recruited help from many academic botanists, including Robert Thorne of Rancho Santa Ana Botanic Garden and Peter Raven of Missouri Botanic Garden, to advocate for protection of the area. Her friend, Mary Ann Henry, began monitoring studies of dune endemics (Henry 1979). DeDecker collected extensively throughout the Owens Valley, eastern Sierra Nevada, and northern Mojave Desert and is the author of *Flora of the northern Mojave Desert* (DeDecker 1984). In 1975, Mary DeDecker, with her husband, Paul, made a collection of an odd shrub in a canyon east of the Eureka Dunes. This unusual buckwheat (Polygonaceae) was named *Dedeckera eurekaensis* in honor of Mary. A further tribute to her accomplishments came when the type locality of *D. eurekaensis* was named Dedeckera Canyon. Her approximately 6400 specimens were donated to the herbarium of Rancho Santa Ana Botanic Garden (RSA) and her index cards recording detailed observations from her collections are curated by the Bristlecone Chapter of CNPS.

Weather Data for the Study Area

The Eureka Valley weather station (Western Regional Climate Center 2020; station ID: TT184) went online in March 2013 and data are presented in Table 2 for 2013–2019. TT184 is located approximately 6.5 km south of the BP-DV and 4 km west of the South Eureka Valley Road. It complements the weather stations at each of the dune locations in the Eureka Valley—the main Eureka Dune (Main), the Saline Spur Dune, and Marble Dune—that were installed by Sara Scoles-Sciulla and Lesley DeFalco of the US Geological Survey in 2012. TT184 is approximately

13 km from the main Eureka Dune, 5 km from Marble Dune, and 8 km from Saline Spur Dune. Rainfall data for 2013, 2014, and 2015 (Scoles-Sciulla and DeFalco 2013, 2014, 2015) are combined with that from TT184 in Table 2. Generally, the rainfall patterns at the dune locations are similar to those recorded by the Eureka Valley weather station (Table 2). Comparison of the two data sets helps to illustrate the patchiness of rainfall in the northern Mojave Desert, with high rainfall sometimes occurring at only one of the four locations in a given month. For October 2013, Scoles-Sciulla and DeFalco recorded 12 mm of rain at Marble Dune but 43 mm at Saline Spur Dune, (no data are available for the main Eureka Valley Dune), while TT184 recorded 7 mm. In contrast, high rainfall occurred at all four locations in August 2014, when Scoles-Sciulla and DeFalco recorded 23 mm at the main Eureka Dune, 32 mm at Saline Spur Dune, and 28 mm at Marble Dune, while TT184 recorded 21 mm for the same period. In July 2015, 5 mm of rainfall was recorded at the Main and Saline Spur dunes, while 14 mm was recorded at Marble Dune and 20 mm at TT184.

Hereford et al. (2006) studied the precipitation history and ecosystem responses in the Mojave Desert for the period 1893–2001. They observed two broad patterns: a bi-seasonal pattern (roughly equal amounts of rainfall during winter and summer months) and a winter-dominant pattern. East of 117° W, a bi-seasonal pattern was recorded by 90% of weather stations; west of 117° W, 70% of weather stations recorded a winter-dominant pattern. The study area is west of 117° W and can be expected to show a dependence on winter rainfall. The bi-seasonal pattern is

Table 2. Recorded rainfall from 2013 through 2019. Comparison of the Eureka Valley weather station (TT184) and the temporary weather stations (Scoles-Sciulla and L. DeFalco 2013, 2014, 2015) at the main Eureka Dune (Main), the Saline Spur Dune (Spur), and the Marble Dune (Marble). Rainfall is given in mm; tr = trace (<0.5 mm); n/a indicates periods when readings were not available.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total
2013													
Main	tr	0	0	0	9	0	24	18	2	n/a	n/a	n/a	53
Spur	0	tr	0	0	4	0	21	3	1	43	1	tr	73
Marb	0	tr	tr	0	4	0	24	11	1	12	4	2	58
TT184	n/a	n/a	n/a	0	2	0	21	9	4	7	9	1	53
2014													
Main	1	18	0	5	2	0	9	23	10	0	tr	8	76
Spur	0	17	0	3	4	0	12	32	5	0	tr	5	78
Marb	0	21	0	tr	5	0	4	28	3	0	3	6	70
TT184	0	18	0	2	15	0	3	21	1	0	tr	6	66
2015													
Main	2	2	2	tr	20	4	5	2	0	38	n/a	n/a	75
Spur	3	0	2	0	27	5	5	4	0	27	n/a	n/a	73
Marb	3	tr	3	0	28	7	14	4	0	38	n/a	n/a	97
TT184	2	0	tr	1	15	2	20	1	0	21	1	0	63
2016													
TT184	11	0	1	21	4	13	8	0	0	0	2	2	62
2017													
TT184	33	18	0	tr	3	0	0	11	3	0	0	0	68
2018													
TT184	12	0	3	1	6	0	15	2	1	1	5	2	48
2019													
TT184	163	12	18	1	33	1	20	0	1	0	14	16	279

due to contributions to the total rainfall from monsoonal storms that originate off the coast of Mexico and travel north along the Gulf of California. However, given that the study area is at the most northern latitudes of the Mojave Desert, the bi-modal distribution of precipitation is attenuated.

In the desert, timing, volume, and distribution of rainfall are extremely important for germination and establishment, especially for winter annuals (Beatley 1967, 1974; Bowers 2005). Table 3 shows the temperature and rainfall data collected by TT184 from 2013 through 2019. For field botanists, these patterns of rainfall determine the availability of plants for collecting, and a patchy distribution of rainfall in our study area (see Table 2) is likely responsible for variation in collection volume during different field seasons. For example, we collected the following numbers of specimens by year: 2014—237, 2015—69, 2016—380, 2017—445, 2018—47, 2019—469. We also observed significant geographical variation in density of available specimens; there were periods when there were large numbers of flowering annuals at the north end of EV while the area around the dunes at the south end of the valley was almost devoid of annuals. In addition, we observed altitudinal variation; LCR receives snowfall almost every year; the depth and persistence of snow contributes to available soil moisture for plant growth at higher elevations and, especially, on northern and eastern aspects.

Geology of the Study Area

The study area is part of the Basin and Range geomorphic province (Eaton 1982) and consists of two graben valleys running northwest to southeast with LCR between them (Fig. 1). The EV is filled with alluvia derived from the Inyo Mountains to the west and LCR to the east. The base rocks of both ranges contain Cambrian marine sediments (limestones, sandstones, silt stones, dolomites, and quartzite); these are overlaid by volcanics, primarily basalts and tuffs (Stewart 1965; McKee 1985; Wrucke and Corbett 1990). The region is crisscrossed with faults, intrusions of granites, and aquifers with resulting complex mineralization (Norris and Webb 1990; Niemi 2002). There have been numerous explorations to locate and extract precious and commercially useful minerals; however, commercial extraction was hampered by lack of water for processing. Gold, silver, copper, lead, and zinc have been found on the east side of the Inyo Mountains. Significant quantities of mercury (El Capitan Mine) and sulfur (Crater Mine) have been extracted from LCR. Small quantities of lead, silver, and gold have been found near Last Chance Spring. The north end of EV and LCR are filled with mine shafts, discarded equipment, exploratory pits, and tailings. For a more detailed description of mining exploration in the study area, see Davis (1993).

Vegetation History of the Study Area

The Mojave Desert is relatively old with respect to geology but relatively young in terms of vegetation. Desertification began with the rain shadow created by the uplift of the Sierra Nevada beginning 25 million years before present (MYA). The rain shadow was well developed at the time of the last glacial maximum (25 thousand years ago, KYA). Although the region defined as Mojavean was never covered with ice, the climate was cooler and the northern Mojave was covered with mesic wood-

land vegetation (Baldwin et al. 2012). As the glaciers receded, the region became drier and warmer. Woodland vegetation was displaced to higher elevations or north-facing exposures or extirpated. Xerophytic shrubs dispersed northward.

The vegetation of the EV changed dramatically during the Holocene (10 KYA; Spaulding 1980, 1990). The packrat midden record documents displacement of juniper woodlands from lower elevations and the slow immigration of heat-tolerant shrubs to replace trees. Midden data from the north end of EV (south-facing dolomite slope and talus, elevation 1390–1555 m, Eureka View site, Fig. 1) describes the vegetation as juniper-shadscale (*Juniperus osteosperma*-*Atriplex confertifolia*) woodland at 14.7 KYA. In addition to these dominant species, *Ephedra* cf. *viridis*, *Hecastocleis shockleyi*, and *Artemisia* spp. were found in the oldest deposits. Juniper was not found in younger deposits and, at the present day, can be located on the north and east sides of LCR above 1500 m. *Ephedra*, *H. shockleyi*, and *Artemisia* can be found close to the Eureka View site at similar elevations but on north-facing exposures. Shadscale persists to the present day at and near the midden site.

Some current-day dominants did not appear in the midden fossil record until much later (Spaulding 1980, 1990); *Ambrosia dumosa* appeared at 6.8 KYA, and *Larrea tridentata* arrived between 5.6 and 3.9 KYA. *Eriogonum fasciculatum* appeared at 1.6 KYA.

Descriptions of Vegetation Types

It is not easy to divide the vegetation in the study area into discrete categories. The alliances and associations that we have observed do not fit neatly into the categories described by Sawyer et al. (2009). We are using their format with modifications to describe the vegetation in the study area. These descriptions are used to define the habitat categories in the checklist (Appendix 1). Not all associated taxa are found at all the sites where a habitat category is used and many associates are found in more than one vegetation type. On the other hand, several of the associations we describe apply only to a single site within the study area.

Larrea tridentata-Ambrosia dumosa Shrubland.—Creosote bush is the most abundant taxon within the study area. Thousands of individuals and some clones (Vasek 1980) are found throughout the Eureka Valley and in the northern portion of Death Valley. There are very arid areas in the center of the Eureka Valley where creosote is sparse and depauperate and few other shrubs and winter annuals are observed. Generally, larger individuals of creosote and a larger number of associated species are found at the north end of the Eureka Valley and on the east side of Last Chance Range. Within the study area, creosote is found below 1500 m in elevation. *Ambrosia dumosa* (bursage) is the most common associate of creosote and is found throughout its range in the study area.

In addition, the following shrubs, perennials, and annuals are associated with *Larrea tridentata*-*Ambrosia dumosa* Shrublands: Shrubs—*Acamptopappus shockleyi*, *Ambrosia monogyra*, *A. salsola*, *Atriplex canescens* var. *canescens*, *A. confertifolia*, *A. hymenelytra*, *A. polycarpa*, *Bahiopsis reticulata*, *Brickellia atractylodes*, *B. longifolia* var. *longifolia*, *Encelia actoni*, *E. farinosa*, *E. virginensis*, *Ephedra aspera*, *E. nevadensis*, *Eriocameria paniculata*, *Eriogonum fasciculatum* var. *polifolium*,

Table 3. Temperature and rainfall data from the Eureka Valley weather station (Western Regional Climate Center 2020; ID: TT184), located at 37.17625 N, 117.78849 W, elevation 2975 ft. The weather station went online in March 2013, and 2013 data are incomplete (*). Winter rainfall is cumulative over October through April.

Year	Average daily max. [°C]	Average daily min. [°C]	Maximum recorded [°C]	Month	Minimum recorded [°C]	Month	Total rainfall [mm]	Highest monthly rainfall [mm]	Month	Winter rainfall [mm]	% of total
2013*	27.9	11.8	38.2	July	−5.2	Dec	52.6	21.3	July		
2014	26.1	9.6	38.5	July	−3.6	Jan	66.0	21.1	Aug	25.9	39
2015	25.6	9.6	37.8	Aug	−5.0	Dec	64.3	21.3	Oct	26.2	41
2016	25.6	9.0	39.2	July	−4.5	Dec	59.9	20.6	April	35.3	59
2017	25.7	9.3	39.8	July	−5.5	Dec	67.1	32.8	Jan	51.3	76
2018	25.7	9.4	39.4	July	−2.1	Dec	48.8	15.2	July	24.1	49
2019	23.8	8.3	38.3	Aug	−1.3	Feb	279.4	163.1	Jan	225.3	81

E. heermannii, *Eucnide urens*, *Grayia spinosa*, *Gutierrezia microcephala*, *Hecastocleis shockleyi*, *Psoralea arborescens*, *Purshia stansburyana*, *Sphaeralcea ambigua*, *Xylorhiza tortifolia*; Perennials—*Astragalus layneae*, *Brickellia oblongifolia* var. *linifolia*, *Calochortus kennedyi* var. *kennedyi*, *Cylindropuntia echinocarpa*, *Cymopterus gilmanii*, *Delphinium parishii*, *Echinocactus polycephalus*, *Eriogonum inflatum*, *Lepidium fremontii*, *Lomatium foeniculaceum* subsp. *fimbriatum*, *Mirabilis laevis*, *Oenothera primiveris* subsp. *bufonis*, *Opuntia basilaris* var. *basilaris*, *Scopolophila rixfordii*, *Stanleya elata*, *S. pinnata*, *Stephanomeria pauciflora*, *Tidestromia suffruticosa*, *Tricardia watsonii*; Annuals (dependent on winter rains)—*Amsinckia tessellata*, *Atrichoseris platyphylla*, *Baileya pleniradiata*, *Calycoseris wrightii*, *Chaenactis* spp., *Chenopodium incanum* var. *occidentale*, *Chorizanthe brevicornu*, *C. rigida*, *Cryptantha* spp., *Eremothera refracta*, *Eriogonum* spp., *Eschscholzia glyptosperma*, *E. minutiflora*, *Euphorbia* spp., *Gilia* spp., *Lepidium* spp., *Malacothrix glabrata*, *Mentzelia albicaulis*, *Mohavea breviflora*, *Phacelia fremontii*, and *Psathyrotes ramosissima*.

Pinus monophylla Woodland (and other, associated woodlands).—Pinyon pine is the most common tree within the study area and is found above 1500 m in LCR. It is rarely found in pure stands; at the north end of LCR, it can be found in combinations with *Artemisia tridentata*, *Ephedra viridis*, *Juniperus osteosperma*, and *Yucca brevifolia*. On the east side of LCR, it is found with *Artemisia nova*, *Coleogyne ramosissima*, and *Juniperus osteosperma*. Other taxa associated with pinyon woodlands: Shrubs—*Atriplex canescens* var. *canescens*, *Cercocarpus ledifolius* var. *intricatus*, *Ephedra viridis*, *Ericameria cooperi* var. *cooperi*, *Grayia spinosa*, *Krascheninnikovia lanata*, *Lycium andersonii*, *L. cooperi*, *Prunus fasciculata*, *P. andersonii*, *Psoralea arborescens*, *Ribes velutinum*, *Symphoricarpos longiflorus*; Perennials—*Boechera perennans*, *Castilleja chromosa*, *Chaetopappa ericoides*, *Cymopterus cinerarius*, *Erigeron aphanactis* var. *aphanactis*, *Galium multiflorum*, *Lomatium parryi*, *Opuntia polyacantha* var. *erinacea*. Relatively few annuals are associated with pinyon woodlands and include *Cordylanthus* spp., *Eriastrum wilcoxii*, *Eriogonum* spp., *Gilia transmontana*, and *Phacelia* spp.

Coleogyne ramosissima Shrubland.—In the study area, blackbrush is found on the eastern slopes of the Inyo Mountains above the Eureka Valley and on the eastern slopes of LCR (it is uncommon on the western slopes of LCR). Blackbrush is interspersed

with creosote scrub at the lower end of its elevation range and with sparse pinyon pine woodlands at the upper end of its elevation range. Associated taxa: *Artemisia spinescens*, *Astragalus* spp., *Boechera pauciflora*, *Brickellia longifolia* var. *multiflora*, *Castilleja chromosa*, *Caulanthus crassicaulis*, *Cercocarpus ledifolius* var. *intricatus*, *Delphinium parishii*, *Ericameria linearifolia*, *Eriogonum heermannii*, *Krascheninnikovia lanata*, *Lomatium nevadense* var. *nevadense*, *Menodora spinescens*, *Pectocarya setosa*, and *Yucca brevifolia*.

Desert Scrub.—There are areas within the study site that contain more than two dominant species, as is found in the first three vegetation types. These are found higher in elevation above *Larrea tridentata*-*Ambrosia dumosa* Shrublands and in pockets and interfaces between *Pinus monophylla* Woodlands and *Coleogyne ramosissima* Shrubland. Desert scrub consists of varying combinations of the following shrubs: *Ambrosia salsola*, *Artemisia tridentata*, *Atriplex confertifolia*, *Bahiopsis reticulata*, *Brickellia longifolia*, *Encelia actoni*, *Ephedra*, *Ericameria nauseosa*, *Eriogonum fasciculatum*, *Grayia spinosa*, *Gutierrezia*, *Krascheninnikovia lanata*, *Lycium*, *Prunus fasciculata*, *Psoralea arborescens*, *Purshia tridentata* (occasionally dominant), *Sphaeralcea ambigua*, and *Tetradymia*. At a few sites in the study area, *Yucca brevifolia* is also a (sparse) component of Desert Scrub. These annuals may also be present: *Chaenactis carphoclinia*, *Cryptantha* spp., *Gilia* spp., *Glyptopleura marginata*, *Ipomopsis polycladon*, *Lepidium lasiocarpum*, *Linanthus* spp., *Oxytheca perfoliata*, *Phacelia* spp., *Prenanthea exigua*.

Calcareous Rock Outcrops.—Significant portions of the northern Last Chance Range and Inyo Mountains contain carbonate rock as exposed strata comprising over a hundred million years of Paleozoic marine deposition (the Wood Canyon, Carrara, Bonanza King, Nopah, and Pogonip Formations [Wrucke and Corbett 1990; Jennings et al. 2010]). These calcareous substrates are found in exposed slopes, outcrops, and canyons and support a characteristic (and sometimes obligate) suite of vegetation. Associated taxa: *Amphipappus fremontii*, *Argyroschisma jonesii*, *Astragalus panamintensis*, *Boechera shockleyi*, *B. yorkii*, *Buddleja utahensis*, *Cymopterus gilmanii*, *Dedeckera eurekaensis*, *Diplacus rupicola*, *Enceliopsis nudicaulis*, *Eremogone macradenia* var. *macradenia*, *Eriogonum fasciculatum* var. *polifolium*, *E. gilmanii*, *E. heermannii*, *E. umbellatum* var. *versicolor*, *Fendlerella utahensis*, *Glossopetalon spinescens*

var. *aridum*, *Penstemon calcareus*, *Phacelia perityloides* var. *perityloides*, *Phacelia rotundifolia*, *Salvia funerea*, *Sclerocactus polyancistrus*, and *Scopolophila rixfordii*.

Dicoria canescens-*Abronia turbinata* *Sparsely Vegetated Alliance*.—This alliance is found on and at the margins of the Eureka Valley dunes. This alliance is surrounded by *Larrea tridentata*-*Ambrosia dumosa* Shrubland. *Dicoria canescens* is found in the deeper sand of the dunes proper, along with *Corispermum americanum*, *Ericameria nauseosa* var. *ceruminosa*, *Stipa hymenoides*, *Swallenia alexandrae*, *Tiquilia plicata*. *Abronia turbinata* grows at the margins of the dunes along with: *Astragalus lentiginosus* subsp. *micans*, *Baileya pleniradiata*, *Carsonia sparsifolia*, *Lupinus shockleyi*, *Malacothrix sonchoides*, *Oenothera californica* subsp. *eurekensis*, *O. primitiveris*, *Psoralea polydenius*, *Sphaeralcea ambigua*. There is a severe infestation of *Salsola paulsenii* at the southeast edge of the main Eureka Dune.

Atriplex spp.-*Suaeda nigra* *Shrublands*.—The lowest part of the Eureka Valley is found northwest of the main Eureka Dune in an area called the Playa. The Playa has highly alkaline and saline soils that support a narrow range of taxa, mostly members of *Amaranthaceae*. These include: *Atriplex canescens* var. *laciniata*, *A. polycarpa*, *A. truncata*, *Salsola paulsenii*, and *Suaeda nigra*.

There are riparian habitats associated with three seeps/springs in the study area; they are all associated with the Death Valley-Furnace Creek fault zone (McKee 1985; Norris and Webb 1990; Wucke and Corbett 1990; Knott et al. 2014). As the only sources of surface water for great distances, most of the seeps have been utilized by humans and animals and are almost always highly disturbed.

Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*.—The largest seep is Sand Spring (1015 m in elevation, with Little Sand Spring) located at the north end of Death Valley on the east side of the Big Pine to Death Valley Road. Sand Spring arises in sparse creosote scrub from a base of sandy, gravelly, slightly consolidated alluvium. The white-crust soils surrounding Sand Spring are highly alkaline and saline due to accumulated minerals left by evaporation at the exposed, west-facing site. A large portion of Sand Spring has been fenced to restrict access by wild burros. Species found there include: *Anemopsis californica*, *Carex praegracilis*, *Eleocharis rostellata*, *Epipactis gigantea*, *Glycyrrhiza lepidota*, *Heliotropium curassavicum*, *Juncus mexicanus*, *Phragmites australis*, *Prosopis glandulosa* var. *torreyana* (a large specimen that died between 2018 and 2019), *Sisyrinchium funereum*, *Solidago confinis*, and *Vitis girdiana*.

Riparian habitats associated with Last Chance Spring.—A complex of seeps is found on the east side and north end of LCR. These are generally more sheltered from evaporation and are less alkaline than Sand Springs or Willow Springs. The largest is Last Chance Spring (1770 m in elevation) that arises from bedrock in a narrow east-west running canyon of the east side of LCR. There are several abandoned mine shafts in the canyon and, clearly, miners have lived in the canyon at various times. Distinct suites of plants are found at the main spring, at the seep on a south-facing slope at the mouth of the narrow canyon, and

at the small seeps in surrounding washes. Last Chance Spring is surrounded by pinyon pine woodland with *Artemisia*, *Coleogyne*, and *Juniperus* close by.

At the main Last Chance Spring, several species may have been deliberately (or inadvertently) introduced by humans: *Asparagus officinalis*, *Juglans hindsii*, *Medicago lupulina*, and *Vitis californica*. In addition, these native taxa were observed: *Baccharis sergiloides*, *Cirsium mohavense*, *Eleocharis macrostachya*, *E. parishii*, *Epipactis gigantea*, *Primula pauciflora*, *Salix lasiolepis*, *Solidago confinis*, and *Vitis girdiana*.

The following taxa were found at the south-facing seep at the mouth of the canyon: *Atriplex canescens*, *Artemisia* spp., *Castilleja minor*, *Elymus condensatus*, *Epipactis gigantea*, *Ericameria nauseosa*, *Gutierrezia*, *Juncus*, *Sarcobatus vermiculatus*, *Schoenoplectus californicus*, *Sisyrinchium funereum*, *Sporobolus airoides*, and *Thelypodium integrifolium*.

At the small seeps in surrounding washes, combinations of the following taxa were found: *Eleocharis*, *Elymus triticoides*, *Equisetum laevigatum*, *Muhlenbergia asperifolia*, *Nasturtium officinale*, *Prosopis glandulosa* var. *torreyana*, *Rosa woodsii*, and *Salix exigua*.

Alkaline seep with *Salix lasiolepis*.—Willow Spring (1775 m in elevation) is directly adjacent to Willow Spring Road in Cucumungo Canyon at the north end of LCR and the national park border. It is highly disturbed by free-range cattle. There is evidence of accumulated minerals at Willow Spring; however, much less than at Sand Spring. Willow Spring is surrounded by *Pinus monophylla*-*Yucca brevifolia* Woodlands (as well as the abundant shrubs, *Artemisia tridentata* and *Ericameria nauseosa*). This site is dominated by *Salix lasiolepis*; the following taxa (at much lower densities) were also observed: *Amaranthus blitoides*, *Calyptridium monandrum*, *Cardamine oligosperma*, *Cryptantha pterocarya* var. *cycloptera*, *Dysphania botrys*, *Elymus cinereus*, *Eremothera boothii* subsp. *alyssoides*, *Juncus balticus*, *J. bufonius* var. *bufonius*, *Ranunculus cymbalaria*, and *Typha domingensis*.

OBJECTIVES AND METHODS

The objective of this project was to document the presence and distribution of vascular plants in the northern portion of Death Valley National Park and the adjacent portion of EV (see Fig. 1). We combined information about historic collections obtained from the Consortium of California Herbaria (CCH1/2 2021) with collections made from 2014 through 2019. Specimens from this study are deposited at DEVA and RSA.

We collected on 65 days in six field seasons from 2014 through 2019. We attempted to recollect all taxa known from historic collections (CCH1/2 2021). Previous field work in the study area was primarily at the main Eureka Dune and surrounding area, Dedekera Canyon, and the springs on the east and north sides of the LCR (especially Sand Spring). We focused collection efforts on the areas north of the BP-DV Road (in the Eureka Valley), the northern portion of LCR, and Last Chance Canyon. We recorded locality data with a Global Positioning System (GPS) device, as well as habitat descriptions, local abundance, and associated taxa. Cacti were processed following the methods of De Groot (2011).

The following keys were used for plant identification: Baldwin et al. (2012), Jepson eFlora (Jepson Flora Project 2020), Flora of North America (1993+), Simpson and Hasenstab (2009), and Morin and Ayers (2020); in addition, we relied heavily on comparisons with the general and synoptic collections of RSA at California Botanic Garden (formerly Rancho Santa Ana Botanic Garden). Fortunately, many of Mary DeDecker and John C. Roos' collections are housed at RSA and we were able to examine those. In addition, we were able to examine collections (especially those of D. York) at DEVA.

Nomenclature is based upon the Jepson eFlora (Jepson Flora Project 2020); Barker et al. (2012) and Fraga (2012) for Phrymaceae; Hasenstab-Lehman and Simpson (2012) for *Cryptantha s.l.*; Boraginales Working Group (Luebert et al. 2016); and Stephens (2001 onwards) for Amaranthaceae and Amaryllidaceae. Synonyms are provided for changes of nomenclature after Baldwin et al. (2012). Relative abundance was estimated from personal observations, Calflora (2019), CCH1/2 (2021), and Baldwin et al. (2012).

This work represents a first report on the vascular plants of the study area. Steve Schoenig is leading on-going efforts to further explore the entire Last Chance Range, particularly the southern portion.

RESULTS

Summary Statistics

We collected 1635 specimens over 6 field seasons. These collections represent 67 families and 542 minimum rank taxa (including historic collections). Table 4 summarizes the results of this study. Of these collections, 51 were the first collection of that taxon from the study area; of these first collections, 24 represent range extensions. First collections from the study area and range extensions are noted in the relevant taxon descriptions.

Table 5 compares the results of our study with studies done in the Adobe Hills (Winitsky 2019), White (Morefield et al. 1988), Cottonwood (Peterson 1984), and Grapevine (Kurzius 1981) mountains. Although these studies vary greatly in area and elevation gain, there are similar patterns: Asteraceae are the largest family and *Eriogonum* the largest genus in all the studies. Poaceae are either 2nd or 3rd largest family in all the studies. *Cryptantha s.l.* and *Astragalus* are among the five largest genera in all the studies. The present study, Adobe Hills, Cottonwood, and Grapevine Mountains are similar in highest elevation (2444 to 2728 m); the White Mountains are almost twice as tall at 4342 m. In absolute numbers, the White Mountains flora has the largest number of taxa (1078) and covers the largest area (2010 sq km). However, proportionally, the Adobe Hills flora has the greatest density of taxa: 395 taxa on 241 sq km. The Cottonwood and Grapevine Mountains are quite similar; they share the same five most numerous families and four of five largest genera (*Phacelia* is more numerous in the Cottonwoods and *Gilia* in the Grapevines; see Table 5). The five largest families in each area account for slightly less than half of the total number of taxa found in each study.

Special Concern Taxa

Assignment as special concern was determined in relation to the CNPS Rare Plant Ranks (CRPR; CNPS 2021b) of the CNPS

Rare Plant Inventory (CNPS 2021a); 9.4% of the taxa on the Annotated Checklist are considered special concern and are designated by the symbol §. Nine taxa are considered by CNPS as rare throughout their ranges (1B); 23 are considered to be rare within California but common outside of California (2B) (Table 6).

In 1978, two narrow endemics (*Oenothera californica* subsp. *eurekensis* and *Swallenia alexandrae*) from the Eureka Dunes were listed as endangered under the Endangered Species Act (as Amended 1983). The Bureau of Land Management administered the dunes at that time and BLM was tasked with developing a recovery plan for these species. Mark Bagley (1988) established monitoring plots for *S. alexandrae*, *O. californica* subsp. *eurekensis*, and *Astragalus lentiginosus* Douglas var. *micans* Barneby on the Eureka Dunes. After 1994, when the dunes and most of EV and LCR were added to Death Valley National Park, park botanists Dana York, Michèle Slaton, and Jane Cipra (with other park personnel and volunteers) continued monitoring of the dune endemics. In 2018, the U.S. Fish and Wildlife Service delisted *O. californica* subsp. *eurekensis* and downlisted *S. alexandrae* to threatened (USFWS 2018). However, CNPS considers both species, along with *A. lentiginosus* var. *micans*, to be rare and endangered (1B.2) because of their narrow distributions (CNPS 2021a).

Historic Collections Not Relocated

We were unable to relocate 45 taxa previously collected within the study area (Table 7). These taxa are designated by ♦ in the checklist. Nine are CRPR listed (CNPS 2021a). Importantly, half are specimens collected by J.C. Roos during several trips in 1955. Bowers (2005) identified the mid-1950s as a period with abundant spring flowering annuals. As these specimens are the only record that these taxa occurred in the study area, we hope that further explorations of the LCR will reveal additional populations.

Non-Native Taxa in the Study Area

Less than 5% of the taxa in the study area are non-native. These taxa are listed in Table 8 along with their California Invasive Plant Council inventory rating (Cal-IPC 2021), the study area habitats where they are found, and our observations. Cal-IPC ratings (High, Moderate, Limited) are based upon statewide evaluations of these species' environmental impacts. We give our assessments of the impacts of these taxa in the study area. Based upon our observations, two can be described as rapidly spreading and degrading the habitats where they occur: *Salsola paulsenii* and *Halogeton glomeratus*. *Salsola paulsenii* is common around the Eureka Dunes, especially along the east side of the dunes where they are dominant in some places. Dead plants and fragments of plants are frequently found tangled in hummocks of *Swallenia alexandrae* and other native plants on the dunes. *Halogeton glomeratus* is expanding its coverage around the large sulfur mine at Crater and is present 4 km north at the El Capitan Mine sites. Both *S. paulsenii* and *H. glomeratus* are also abundant along the North Eureka Valley Road at the mouth of Cucumungo Canyon.

Another non-native taxon of concern is *Tamarix*. The saltcedar in the study area is probably the widespread *T. chinensis* × *ramosissima* hybrid or the hybrid back-crossed with *T.*

Table 4. Summary of known collections from the study area. The majority were made by us from 2014 to 2019. Life forms: annuals (235) 43%; perennials (197) 36%; shrubs (103) 19%; trees (8) 1%. Twenty-two families were represented by a single taxon, while ten families accounted for 67% of total collections. Group headings follow Baldwin et al. (2012). The California Rare Plant Rank (CRPR) listings are from the California Native Plant Society Inventory of Rare and Endangered Plants. The two columns to the right contain numbers for historic collections not relocated during the current study and recent collections by other collectors (historic: before 1990; recent: 1990 and after).

Group	Family	# taxa	# non-native	# CRPR listed	Historic	Recent other
Ferns	Equisetaceae	1				
	Pteridaceae	3				1
Gymnosperms	Cupressaceae	1				
	Ephedraceae	3				
	Pinaceae	2		1	1	
Magnoliids	Saururaceae	1				
Eudicots	Amaranthaceae	20	4	2	1	2
	Apiaceae	9		3	2	
	Apocynaceae	3			2	
	Asteraceae	92	2	4	10	1
	Boraginaceae	32		1	1	3
	Brassicaceae	34	4	4	2	1
	Cactaceae	9		2		
	Campanulaceae	4				
	Caprifoliaceae	1				
	Caryophyllaceae	3				1
	Cleomaceae	2				
	Convolvulaceae	2				
	Crossosomataceae	1				
	Ehretiaceae	2				
	Euphorbiaceae	3				
	Fabaceae	28	1	9	2	3
	Gentianaceae	1			1	
	Geraniaceae	1	1			
	Grossulariaceae	2			1	
	Heliotropiaceae	1				
	Hydrangeaceae	1		3		
	Hydrophyllaceae	19		3	1	
	Juglandaceae	1				
	Lamiaceae	4		1		
	Loasaceae	9				
	Malvaceae	5				
	Montiaceae	2				
	Namaceae	2				
	Nyctaginaceae	10		1	2	
	Oleaceae	2			1	
	Onagraceae	25		3	1	1
	Orobanchaceae	7		1		1
	Papaveraceae	3				
	Phrymaceae	6		1		
	Plantaginaceae	10		2	4	
	Polemoniaceae	35			1	1
	Polygonaceae	39		5	4	
	Primulaceae	1		1		
	Ranunculaceae	4	1			
	Rosaceae	10				
	Rubiaceae	2				
	Rutaceae	1			1	
	Salicaceae	2				
	Sarcobataceae	1				
	Scrophulariaceae	1				

Table 4. Continued.

Group	Family	# taxa	# non-native	# CRPR listed	Historic	Recent other
Monocots	Solanaceae	6	2		1	
	Tamaricaceae	1	1			
	Viscaceae	2				
	Vitaceae	2				
	Zygophyllaceae	1				
	Agavaceae	1				
	Amaryllidaceae	2		2	1	
	Asparagaceae	1	1			
	Cyperaceae	6				
	Iridaceae	1		1		
	Juncaceae	3				
	Liliaceae	3				
	Orchidaceae	1				
	Poaceae	47	8	4	5	1
	Themidaceae	1				
	Typhaceae	1				
Totals	67 families	542	25	51	45	16
Percentage of total			4.6	9.4	8.3	2.9

Table 5. Comparison of several floristic, collection-based studies from eastern California and western Nevada. These studies varied in the size of the study areas, topography, and the time frame of the project. Taxonomy is not uniform between the studies and affects *Cryptantha s.l.*

Study	Area (sq km)	Highest elevation (m)	Elevation gain (m)	Minimum rank taxa	% non-native	Largest families	Largest genera
Northern Death Valley National Park (present study)	1735	2577	1767	542	5	Asteraceae (92) Poaceae (47) Polygonaceae (39) Polemoniaceae (35) Brassicaceae (34)	<i>Eriogonum</i> (29) <i>Cryptantha</i> (24) <i>Astragalus</i> (15) <i>Gilia</i> (15) <i>Phacelia</i> (14)
Adobe Valley (Winitsky 2019)	241	2444	432	395	5	Asteraceae (73) Poaceae (36) Brassicaceae (29) Polemoniaceae (24) Boraginaceae (23)	<i>Eriogonum</i> (14) <i>Carex</i> (12) <i>Cryptantha</i> (14) <i>Astragalus</i> (9) <i>Boechera</i> (7)
White Mountains (Morefield et al. 1988)	2010	4342	3126	1078	7	Asteraceae (180) Brassicaceae (82) Poaceae (57) Polygonaceae (57) Fabaceae (54)	<i>Eriogonum</i> (40) <i>Carex</i> (31) <i>Arabis</i> (24) <i>Cryptantha</i> (23) <i>Astragalus</i> (20)
Cottonwood Mountains (Peterson 1984)	1066	2728	2667	547	n/a	Asteraceae (102) Poaceae (43) Polygonaceae (40) Fabaceae (32) Polemoniaceae (28)	<i>Eriogonum</i> (31) <i>Cryptantha</i> (20) <i>Phacelia</i> (17) <i>Astragalus</i> (14) <i>Camissonia</i> (12)
Grapevine Mountains (Kurzius 1981)	1285	2663	~2663	537	n/a	Asteraceae (94) Polygonaceae (38) Poaceae (35) Fabaceae (35) Polemoniaceae (32)	<i>Eriogonum</i> (28) <i>Cryptantha</i> (17) <i>Astragalus</i> (15) <i>Gilia</i> (14) <i>Camissonia</i> (14)

Table 6. Special concern taxa (rare, endangered, and watchlist) in the study area. Rarity status is derived from the California Native Plant Society (California Rare Plant Rank) and the State and Federally Listed Endangered, Threatened, and Rare Plants of California (CNDDB, July 2021).

Taxon	CRPR status	State status	Federal status	Comments
<i>Astragalus lentiginosus</i> var. <i>sesquimetalis</i>	1B.1	Endangered		
<i>Astragalus lentiginosus</i> var. <i>micans</i>	1B.2			
<i>Oenothera californica</i> subsp. <i>eurekaensis</i>	1B.2	Rare	Delisted on 3/29/2018	Endemic to study area
<i>Swallenia alexandrae</i>	1B.2	Rare	Downlisted to threatened 3/29/2018	Endemic to study area
<i>Boechera yorkii</i>	1B.3			Endemic to study area
<i>Dedeckera eurekaensis</i>	1B.3	Rare		
<i>Eriogonum gilmanii</i>	1B.3			
<i>Penstemon calcareus</i>	1B.3			
<i>Sisyrinchium funereum</i>	1B.3			
<i>Ambrosia monogyra</i>	2B.2			
<i>Astragalus platytropis</i>	2B.2			
<i>Astragalus sabulonum</i>	2B.2			
<i>Astragalus serenoii</i> var. <i>shockleyi</i>	2B.2			
<i>Atriplex argentea</i> var. <i>hillmanii</i>	2B.2			Historic collection
<i>Boechera shockleyi</i>	2B.2			
<i>Chaetadelpha wheeleri</i>	2B.2			
<i>Corispermum americanum</i> var. <i>americanum</i>	2B.2			
<i>Cymopterus gilmanii</i>	2B.2			
<i>Frasera albomarginata</i> var. <i>albomarginata</i>	2B.2			Historic collection
<i>Lomatium foeniculaceum</i> subsp. <i>macdougallii</i>	2B.2			
<i>Sclerocactus johnsonii</i>	2B.2			
<i>Allium nevadense</i>	2B.3			
<i>Blepharidachne kingii</i>	2B.3			
<i>Boechera lincolnensis</i>	2B.3			Historic collection
<i>Bouteloua trifida</i>	2B.3			
<i>Cuniculotinus gramineus</i>	2B.3			Historic collection
<i>Cymopterus multinervatus</i>	2B.3			
<i>Eremothera boothii</i> subsp. <i>intermedia</i>	2B.3			
<i>Eriogonum nutans</i> var. <i>nutans</i>	2B.3			
<i>Lupinus polyphyllus</i> var. <i>humicola</i>	2B.3			
<i>Phacelia coerulea</i>	2B.3			
<i>Stipa arida</i>	2B.3			
<i>Abronia nana</i> var. <i>covillei</i>	4.2			
<i>Astragalus inyoensis</i>	4.2			Collected by J.M. André in 2014
<i>Oenothera cespitosa</i> subsp. <i>crinata</i>	4.2			
<i>Primula pauciflora</i>	4.2			
<i>Sclerocactus polyancistrus</i>	4.2			
<i>Allium atrorubens</i> var. <i>cristatum</i>	4.3			Historic collection
<i>Cordylanthus eremicus</i> subsp. <i>eremicus</i>	4.3			
<i>Diplacus rupicola</i>	4.3			
<i>Enceliopsis nudicaulis</i>	4.3			
<i>Eriogonum shockleyi</i> var. <i>shockleyi</i>	4.3			Historic collection
<i>Fendlerella utahensis</i>	4.3			
<i>Oreocarya tumulosa</i>	4.3			
<i>Penstemon scapoides</i>	4.3			Historic collection
<i>Phacelia mohavensis</i>	4.3			
<i>Phacelia peirsoniana</i>	4.3			
<i>Pinus longaeva</i>	4.3			Observed by D. York in 2000
<i>Psoralea arborescens</i> var. <i>arborescens</i>	4.3			
<i>Salvia funerea</i>	4.3			
<i>Sibara deserti</i>	4.3			Historic collection

Table 7. Taxa that were not relocated during the present study. We give the number of collections that were located in searches of the CCH1 and CCH2 databases (CCH1/2 2021), the last year collected, and, if applicable, CRPR status. With the exception of one collection by P. Munz, all the collections from 1955 were made by J.C. Roos.

Taxon	# in CCH1, CCH2	Year last collected	CRPR status
<i>Aliciella lottiae</i>	6	1976	
<i>Allium atrorubens</i> var. <i>cristatum</i>	2	1978	4.3
<i>Amsonia tomentosa</i>	4	1978	
<i>Anulocaulis annulatus</i>	1	1955	
<i>Artemisia bigelovii</i>	5	1977	
<i>Asclepias erosa</i>	1	1978	
<i>Astragalus calycosus</i> var. <i>calycosus</i>	1	1955	
<i>Atriplex argentea</i> var. <i>hillmanii</i>	3	1980	2B.2
<i>Boechera lincolniensis</i>	1	1987	2B.3
<i>Bouteloua barbata</i> var. <i>barbata</i>	3	1979	
<i>Chaenactis xantiana</i>	2	1955	
<i>Chrysothamnus viscidiflorus</i> subsp. <i>viscidiflorus</i>	3	1961	
<i>Chylismia heterochroma</i>	2	1976	
<i>Cuniculotinus gramineus</i>	1	1977	2B.3
<i>Cymopterus aboriginum</i>	4	1977	
<i>Ericameria nauseosa</i> var. <i>hololeuca</i>	2	1955	
<i>Erigeron argentatus</i>	2	1955	
<i>Erigeron clokeyi</i> var. <i>pinzliae</i>	2	1955	
<i>Eriogonum baileyi</i> var. <i>baileyi</i>	2	1955	
<i>Eriogonum rosense</i> var. <i>rosense</i>	1	1962	
<i>Eriogonum shockleyi</i> var. <i>shockleyi</i>	3	1971	4.3
<i>Erythranthe calicicola</i>	1	1978	
<i>Frasera albomarginata</i> var. <i>albomarginata</i>	2	1977	2B.2
<i>Fraxinus anomala</i>	2	1977	
<i>Gayophytum ramosissimum</i>	1	1955	
<i>Keckiella rothrockii</i> subsp. <i>rothrockii</i>	1	1955	
<i>Lepidospartum latisquamum</i>	3	1978	
<i>Lomatium foeniculaceum</i> subsp. <i>macdougalii</i>	1	1955	2B.2
<i>Lupinus brevicaulis</i>	2	1982	
<i>Mirabilis alipes</i>	1	1971	
<i>Muhlenbergia utilis</i>	2	1980	
<i>Oxytheca dendroidea</i> subsp. <i>dendroidea</i>	1	1955	
<i>Penstemon rostriflorus</i>	1	1955	
<i>Penstemon scapoideus</i>	1	1955	4.3
<i>Penstemon speciosus</i>	1	1955	
<i>Pinus longaeva</i>	1	1955	4.3
<i>Ribes cereum</i>	1	1955	
<i>Sibara deserti</i>	2	1975	4.3
<i>Solanum triflorum</i>	1	1955	
<i>Stenotus acaulis</i>	1	1955	
<i>Stipa pinetorum</i>	1	1955	
<i>Stipa thurberiana</i>	1	1955	
<i>Tetradymia glabrata</i>	1	1978	
<i>Thamnosma montana</i>	1	1955	
<i>Tridens muticus</i> var. <i>muticus</i>	1	1955	

chinensis (Gaskin and Schaal 2002; Gaskin and Kazmer 2009). It was collected three times: in Last Chance Canyon and at two seeps east of Last Chance Spring. Although it is not common in the study area, there should be concern about potential increase at its current sites and/or spread to other nearby seeps.

Several grasses, *Bromus* spp. and *Schismus* spp., are widespread in the study area. They have the potential to compete with native annuals (Beatley 1967) and to spread wildfires (Brooks 1999; Fusco et al. 2019).

Other non-natives are present at much lower densities and do not appear to impact native species or to change or dominate landscapes (Table 8).

Taxa Excluded from the Checklist

Whenever possible we examined historic collections from the study area that are cited in CCH1/2 (2021); fortunately, many of these are housed at RSA. There were a few specimens that were difficult to determine to species and other specimens we could

Table 8. Non-native species collected in the study area, habitats where found, and our observations. Cal-IPC (California Invasive Plant Council) ratings of High, Moderate and Limited evaluate the ecological impact of a taxon across California natural areas.

Taxon	Cal-IPC rating	Habitat	Observations
<i>Asparagus officinalis</i> subsp. <i>officinalis</i>		Near Last Chance Spring	Uncommon outside of cultivation, may have been planted by miners
<i>Bromus berteroi</i>		Crater, near mining sites	
<i>Bromus madritensis</i>	High	Fairly widespread in study area	
<i>Bromus tectorum</i>	High	Fairly widespread in study area	
<i>Chenopodium album</i>		Last Chance Canyon	First collection from the study area
<i>Descurainia sophia</i>	Limited	Found near disturbance, roadsides	
<i>Dysphania botrys</i>		Found along Willow Creek Road in Cucomungo Canyon	First collection from the study area
<i>Erodium cicutarium</i>	Limited	Found along roadsides	
<i>Halogeton glomeratus</i>	Moderate	Abundant along North Eureka Valley Road at the mouth of Cucomungo Canyon	Appears to be highly invasive and spreading
<i>Hornungia procumbens</i>		Found near disturbed seeps	
<i>Lepidium campestre</i>		Found along roadsides	
<i>Medicago lupulina</i>		Near Last Chance Spring	May have been introduced by miners
<i>Nicotiana acuminata</i> var. <i>multiflora</i>		Near Willow Spring	Uncommon in study area
<i>Polypogon interruptus</i>		Uncommon in study area, found near seeps	
<i>Polypogon maritimus</i>		Uncommon in study area, found near seeps	
<i>Polypogon monspeliensis</i>	Limited	Relatively common	
<i>Ranunculus testiculatus</i>		Uncommon in study area	
<i>Salsola paulsenii</i>	Limited	Abundant along North Eureka Valley Road at the mouth of Cucomungo Canyon, also on the east side of the main Eureka Dune	Appears to be highly invasive and spreading, plant fragments can be found tangled in native dune plants.
<i>Schismus arabicus</i>	Limited	Widespread in creosote scrub	
<i>Schismus barbatus</i>	Limited	Widespread in creosote scrub	
<i>Sisymbrium irio</i>	Limited	Found near highly disturbed mining sites	
<i>Solanum triflorum</i>		Uncommon in study area	
<i>Sonchus oleraceus</i>		Found in the disturbed area near Last Chance Spring	
<i>Tamarix chinensis</i> × <i>ramosissima</i>	High	Found at seeps east of Last Chance Spring and in Last Chance Canyon.	It might be possible to remove before additional individuals become established. See Gaskin and Kazmer (2009) about hybridization.
<i>Taraxacum officinale</i>		Found in the disturbed area near Last Chance Spring	

not locate. Also, there were specimens whose occurrence in the study area was disjunct from their known distribution. We have excluded these specimens from the checklist. However, we want to encourage specialists to seek out and examine them so that they can be correctly identified (Table 9).

DISCUSSION

The study area has a density of vascular plant taxa that is comparable to other surveyed areas in the region (Grapevine Mountains [Kurzius 1981]; Cottonwood Mountains [Peterson 1984]; White Mountains [Morefield et al. 1988]; Adobe Hills [Winitsky 2019]; Table 5). We have documented diversification in Asteraceae, as well as *Eriogonum*, *Cryptantha* (s.l.), *Astragalus*, *Gilia*, and *Phacelia*. We collected 51 taxa designated as threatened or watchlist by CNPS (2021a) and documented 24 range expansions. However, we were unable to locate 45 previously collected taxa, some of which have not been collected since 1955.

The study area contains a suite of geologic features (sand dunes, seeps and springs, a calcareous mountain range overlain by volcanic deposits) conducive to the evolution of plants adapted to very specific habitats (i.e., endemics). Fossil data from packrat middens suggest that the local climate has become warmer and drier during the Holocene, and the assemblage of plants currently observed has only been in place for a few thousand years. This already rapid desertification has been combined with accelerating rates of human-induced climate change; plants and animals are faced with highly variable temperature and rainfall regimes.

Stebbins and Major (1965) identified the northern Mojave Desert (roughly eastern Inyo County) as a region having relatively high endemism as well as a high proportion of relictual species. Population biology has been examined for only a few of the endemics from the study area: low recruitment and low genetic diversity was found in *Dedeckera eurekaensis* (Wiens et al. 2002) and low genetic diversity was found in *Swallenia alexandrae* (Bell 2013). However, Pavlik and Barbour (1988) deter-

Table 9. Taxa excluded from the checklist. Taxa were excluded if we were unable to examine specimens and/or the specimen is disjunct from its main area of distribution and/or characters were ambiguous.

Taxon	Collector/number	Notes
<i>Astragalus lentiginosus</i> var. <i>albifolius</i>	R.M. Straw & D.S. Webb 891	Unable to examine specimen, disjunct from other collections from the Owens Valley.
<i>Boechera retrofracta</i> (<i>Arabis perennans</i> , <i>Arabis pulchra</i> var. <i>gracilis</i>)	M. DeDecker 4695	Duplicates with different determinations, none have been annotated, specimens could not be located.
<i>Camissonia minor</i>	D. Wiens 5935	Characters ambiguous, flowers small and late season.
<i>Lupinus concinnus</i>	T.R. Gordon 1434	Disjunct from other collections to the south.
<i>Oreocarya nubigena</i>	J.C. Roos 6487	Unable to examine specimen, disjunct from other collections in the Owens Valley and Sierra Nevada.
<i>Psoralea fremontii</i>	J.C. Roos 6332	Unable to examine specimen, frequently confused with <i>P. arborescens</i> var. <i>minutifolius</i> .
<i>Sphaeralcea emoryi</i>	M. DeDecker 4209	Characters ambiguous.
<i>Thelypodium integrifolium</i> subsp. <i>complanatum</i>	J.F. Emmel 641	Specimen is in early flower, no fruits present.
<i>Tripterocalyx micranthus</i>	A.M. Alexander 5649	Unable to examine specimen, disjunct from other collections in San Bernardino County.

mined that while recruitment is infrequent in *S. alexandrae*, the plants are relatively long lived and the seeds persist in the seed bank.

There are relatively few non-native species on the checklist. However, several of these are becoming more widespread and threaten habitats previously occupied solely by native plants. *Salsola paulsenii* is well established along the southeast side of the main Eureka Valley dune. The same wind patterns that create and maintain the dunes push plants and plant fragments over the dunes where they become trapped in native vegetation, especially hummocks of *S. alexandrae*. Relatively few mature plants of *S. paulsenii* are observed on the dunes, but the plant fragments disintegrate slowly and can alter the local substrate composition and nutrient balance under native plants. *Salsola paulsenii* (along with *Halogeton glomeratus*) is ubiquitous at roadsides at the mouth of Cucomungo Canyon (see Fig. 1). Vehicular traffic along North Eureka Valley Road as well as runoff flowing down Willow Wash makes control of these invasive weeds very difficult. Tamarisk was observed at three seeps on the eastern side of LCR. Its ability to spread is probably limited by the overall dryness of the landscape, but it does have the potential to alter native habitat and to disperse to other seeps by occasional high winds. A few non-native grasses are relatively widespread in the study area. Such grasses, especially *Bromus* spp., have the potential to form a dense understory below native shrubs and *Y. brevifolia*. A build-up of dried grasses can contribute to the spread of wildfires even in areas of sparse vegetation (Brooks 1999; Fusco et al. 2019). Non-native species compete with native taxa for water and soil nutrients.

Yucca brevifolia is an iconic, widespread symbol of the Mojave Desert that is gradually migrating northward. It is common along Willow Wash Road and North Eureka Valley Road as it enters Fish Lake Valley. CCH1/2 (2021) list a single collection of *Y. brevifolia* from Mono County (made by J. Morefield in 1987 from the northeast end of the White Mountains). This specimen and 18 others have been recently resurveyed with GPS and documented in iNaturalist, <https://www.inaturalist.org/projects/california-s-northernmost-joshua-trees> (J. Morefield, pers. comm.). Climate change (natural and human

induced) has shaped the flora of the northern Mojave Desert. Even in this relatively remote corner of California the landscape has been altered by human activities: mineral exploration, road building, recreation, and introduction of non-native plants and animals. This checklist will be a record of plant distributions during a brief period in the history of the evolving Mojave Desert.

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APPENDIX 1

ANNOTATED CHECKLIST

This checklist follows the classification of Baldwin et al. (2012) with changes in nomenclature provided by the Jepson eFlora (Jepson Flora Project 2020); Phrymaceae: Barker et al. (2012), Fraga (2012); *Cryptantha sensu lato*: Hasenstab-Lehman and Simpson (2012); Boraginales (Luebert et al. 2016); Polemoniaceae: Porter and Patterson (2015); *Nemacladus*: Morin and Ayers (2020); and Amaryllidaceae and Amaranthaceae (Stephens 2001 onwards). Families are listed alphabetically within the conventions of Baldwin et al. (2012): Ferns, Gymnosperms, Magnoliids, and Angiosperms (divided into Eudicots and Monocots). Relative abundance is derived from multiple sources: Baldwin et al. (2012), CNPS Inventory of Rare and Endangered Plants (CNPS 2021a), and Calflora (2019). Synonymy is given if nomenclature has changed since Baldwin et al. (2012).

Special concern is assigned based upon inclusion in the CNPS Rare Plant Inventory (CNPS 2021a) and utilizes its CRPR rankings (CNPS 2021b):

Distribution: 1A presumed extinct or extirpated in California, 1B rare throughout their range, 2A extirpated in California but common elsewhere, 2B rare in California but common elsewhere, 3 generally problematic taxonomically and lacking information to assign to a rank, 4 plants with a limited distribution throughout California, watchlist; Threats: 0.1 seriously threatened in California, 0.2 moderately threatened in California, 0.3 not very threatened in California.

Specimens cited in the checklist were chosen based upon their occurrence in representative habitat. We include a very brief description of diagnostic characters with the hope that the checklist will be helpful to visitors to the study area. For a list of bryophytes from the study area, please see De Groot (2022, this issue).

These collections were made under National Park Service permits, DEVA-2017-SCI-0008, DEVA-2017-SCI-0012 and Bureau of Land Management permit, CA930-F-2019-004, U.S. Fish and Wildlife permit TE-009018-4.2. Specimens from this study are deposited at DEVA and RSA.

The checklist is formatted as follows:

SCIENTIFIC NAME Authority. Common Name. Habit (annual, perennial, etc.).

Vegetation type. Habitat in the study area. Relative abundance. Observations, key characters [synonymy]. Representative specimen(s) (Herbarium Code). Additional notes.

(The habitat notes for historic collections are enclosed in quotation marks. The collection date is given for all collections that were not made during this study.)

The following symbols and abbreviations are used in the checklist:

* Non-native

§ Special concern, listed on CNPS Inventory of Rare and Endangered Plants (2021a; CRPR status)

◆ Historic collection not relocated after 1990 or during the present study (historic habitat descriptions contained in quotation marks.)

! Authors have seen the cited specimen and agree with the identification

Consortium of California Herbaria (CCH1, CCH2):

Herbaria (as listed in CCH1/2): CAS (California Academy of Science), DAV (UC Davis), DEVA (Death Valley National Park), GMDRC (Sweeney Granite Mountains Desert Research Center), RSA (Rancho Santa Ana Botanic Garden, now California Botanic Garden), UCJEPS (Jepson Herbarium [JEPS]/UC Berkeley [UC]), UCR (UC Riverside). Note: POM (Pomona College) collections have been fully integrated with RSA since 1966 and are not listed separately.

FERNS

EQUISETACEAE

EQUISETUM LAEVIGATUM A. Braun. Smooth scouring rush. Generally annual. *Pinus monophylla* woodland. Steep canyon ENE of Last Chance Spring. Relatively common in northern Inyo County, rare in study area. Branches 0, sheath with 1 dark band at tip. *S.J. De Groot* 9963.

PTERIDACEAE

ARGYROCHOSMA JONESII (Maxon) Windham. Jones' false cloak-fern. Rhizomatous perennial. Desert Scrub with *Atriplex confertifolia*, *Coleogyne ramosissima*, *Eriogonum fasciculatum*, Calcareous Rock Outcrops. Northeast-facing limestone talus slope in Last Chance Range, northeast of Crater mine site. Occasional in Inyo County. Leaves without white exudate abaxially, rhizome scales without dark midstripe, leaf hairs 0. *S.J. De Groot* 11092. Two previous collections from the study area.

MYRIOPTERIS GRACILIS Fée. Slender lip fern. Rhizomatous perennial. *Pinus monophylla-Ephedra viridis* Woodland. Last Chance Range: 0.7 km S-SE of Last Chance Mountain, in drainage above the Eureka Valley. Uncommon. Leaf hairs sparse adaxially. [Syn. *Cheilanthes feei* T. Moore] *D.A. York* 2371 !, 6 May 2000 (DEVA).

MYRIOPTERIS PARRYI (D.C. Eaton) Grusz & Windham. Parry's lip fern. Rhizomatous perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bend in west side of Last Chance Range opposite the northeast corner of the main Eureka Dune, in rock crevices at margin between bajada and Last Chance Range. Common in Inyo County and south. Leaves hairy, silver adaxially, tan to brown abaxially, rhizome scales with dark midstripe. [Syn. *Cheilanthes parryi* (D.C. Eaton) Domin]. *H.L. Bell* 1212. Two previous collections from the study area.

GYMNOSPERMS

CUPRESSACEAE

JUNIPERUS OSTEOSPERMA (Torr.) Little. Utah juniper. Shrub or tree, generally < 10 m. *Pinus monophylla-Juniperus osteosperma* Woodland. Canyon to Last Chance Spring on the east side of Last Chance Range, with *Phoradendron juniperinum*. Common, locally abundant. Trunk usually 1 at base, leaf glands obscure. *H.L. Bell* 1388.

EPHEDRACEAE

EPHEDRA ASPERA S. Watson. Boundary ephedra. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Rocky outcrop from Inyo Mountains on northwest side of Eureka Valley, north of Soldier Pass Canyon. Uncommon. Seed cone bracts red-brown, leaves 2 per node, twigs green or gray-green, seed 1 per cone. *H.L. Bell* 1365.

EPHEDRA NEVADENSIS S. Watson. Nevada ephedra. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Mouth of DeDecker Canyon. Common. Twigs pale green, spreading, seeds 2 per cone. *H.L. Bell* 620.

EPHEDRA VIRIDIS Coville. Green ephedra. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland, *Pinus monophylla-Juniperus osteosperma* Woodland. North border of Last Chance Range and Death Valley National Park. Common. Twigs bright green, broom-like. *H.L. Bell* 790.

PINACEAE

◆§ PINUS LONGAeva D.K. Bailey. Bristlecone pine. Tree. CRPR status 4.3. "Whitotop Peak, summit of Last Chance Mountains." *J.C. Roos* 6483 !, 21 July 1955 (RSA). (John Roos comments that it was "represented by a single tree". Dana York reported seeing a single bristlecone pine on Whitotop in 2000.) Leaves 5 per bundle, seed cone scale with prickle.

PINUS MONOPHYLLA Torr. & Frém. Single-leaf pinyon pine. Tree. *Pinus monophylla-Juniperus osteosperma* Woodland. Occurs with *Juniperus osteosperma* in Last Chance Canyon and with *Yucca brevifolia* at the northern edge of Last Chance Range. Common, more frequent to dominant at higher elevations. Leaves one per bundle. *H.L. Bell* 1580.

MAGNOLIIDS

SAURURACEAE

ANEMOPSIS CALIFORNICA (Nutt.) Hook. & Arn. Yerba Mansa. Rhizomatous perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Locally abundant. Inflorescence conic with white, spoon-shaped floral bracts. *H.L. Bell* 1505.

ANGIOSPERMS—EUDICOTS

AMARANTHACEAE

AMARANTHUS BLITOIDES S. Watson. Procumbent pigweed. Monoecious annual. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range, at edge of road above seep. Uncommon in Inyo Co. Inflorescence of axillary and terminal clusters, perianth parts 4–5. *S.J. De Groot* 11338. First collection from study area.

◆§ ATRIPLEX ARGENTEA Nutt. var. HILLMANII M.E. Jones. Hillman's silverscale. Annual. CRPR status 2B.2. "Eureka Valley: Eureka Dunes, border of playa." *M. DeDecker* 4010 !, 2 Nov 1975 (RSA); "Eureka Valley: drainage from white outcropping about quarter mile N of dunes." *M. DeDecker* 4056 !, 14 May 1976 (RSA). Leaves sessile, stems and leaves scaly, with inflated hairs not elongated.

ATRIPLEX CANESCENS (Pursh) Nutt. var. CANESCENS. Fourwinged saltbush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland, *Pinus monophylla-Juniperus osteosperma* Woodland, *Atriplex* spp.-*Suaeda nigra* Shrubland. Washes, also alkaline playa. Common. Fruit bracts generally 4, to 12 mm. *H.L. Bell* 930.

ATRIPLEX CANESCENS (Pursh) Nutt. var. LACINIATA Parish. Caleb saltbush. Shrub. *Atriplex* spp.-*Suaeda nigra* Shrubland. Alkaline playa west of main Eureka Dune. Uncommon in Inyo County. Fruit bracts (4), sharply dentate. *H.L. Bell* 833.

ATRIPLEX CONFERTIFOLIA (Torr. & Frém.) S. Watson. Shadscale. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland and other habitats. Bajadas, washes, dry woodland. Common. Branch tips spiny, fruit bracts 2. *H.L. Bell* 1684.

ATRIPLEX HYMENELYTRA (Torr.) S. Watson. Desert-holly. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Mouth of Hanging Rock Canyon. Common but patchy, abundant at this site. Leaves light gray, margins sharply dentate, fruit bracts 2. *H.L. Bell* 1310.

ATRIPLEX POLYCARPA (Torr.) S. Watson. Allscale saltbush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Atriplex* spp.-*Suaeda ni-*

- gra* Shrubland. Dry washes, alkaline playa west of main Eureka Dune. Common. Leaf blade oblong to oblanceolate, 2–4 mm wide. *H.L. Bell* 861.
- ATRIPLEX TRUNCATA* (Torr. ex S. Watson) A. Gray. Wedgescale. Annual. *Atriplex* spp.-*Suaeda nigra* Shrubland. Eureka Valley, edge of playa. Uncommon. Fruit tip truncate to notched. *D.A. York* 2596 !, 12 May 2001 (DEVA).
- * *CHENOPODIUM ALBUM* L. Lamb's quarters. Annual. *Pinus monophylla*-*Yucca brevifolia* Woodland, *Pinus monophylla*-*Juniperus osteosperma* Woodland. Sandy saddle at head of Last Chance Canyon (parallel to Last Chance Range on east side). Inflorescence branches straight, leaves not fleshy. Rare in Inyo County but common in California. *S.J. De Groot* 11323. First collection from the study area.
- CHENOPODIUM FREMONTII* S. Watson. Fremont's goosefoot. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Sandy washes. Occasional in Inyo County. Inflorescence a spike, leaves fleshy. *H.L. Bell* 921.
- CHENOPODIUM INCANUM* (S. Watson) A. Heller var. *occidentale* D.J. Crawford. Mealy goosefoot. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Willow Wash Road. Uncommon in Inyo County. Inflorescence a panicle, leaves fleshy. *H.L. Bell* 1691.
- § *CORISPERMUM AMERICANUM* (Nutt.) Nutt. var. *americanum*. American bugseed. Annual. *Dicoria canescens*-*Abronia turbinata* Sparsely Vegetated Alliance. Death Valley National Park: east border of Marble Dune, north-facing slope of sandy drainage. CRPR status 2B.2. Leaves linear to lance-linear to thread-like. *A. Kaiser* 15-42 !, 7 Apr 2015 (RSA). Last collected in the study area in 1983.
- * *DYSPHANIA BOTRYS* (L.) Mosyakin & Clemants. Jerusalem oak. Annual. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range, growing at edge of road above seep. Uncommon in Inyo County, common in California. Sepals with dense, stalked glands. *S.J. De Groot* 11336. First collection from the study area.
- GRAYIA SPINOSA* (Hook.) Moq. Spiny hopsage. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland and other habitats. Bajadas and washes. Common, usually locally abundant. Pistillate bracts entire, wholly fused, glabrous or minutely hairy, not scaly. *H.L. Bell* 1338.
- * *HALOGETON GLOMERATUS* (M. Bieb.) C.A. Mey. Saltlover. Fleshy annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Common at the north end of the Eureka Valley at the mouth of Cucomungo Canyon. Noxious weed, follows disturbance. Leaves fleshy, cylindric ending in a narrow bristle. *H.L. Bell* 1695.
- KOCHIA AMERICANA* S. Watson. Green molly. Subshrub. Sparse *Pinus monophylla*-*Juniperus osteosperma* Woodland, Desert Scrub. Ridgeline in northern Last Chance Range. Uncommon in California with greatest abundance in Inyo County. Many stems from the base, calyx wings fan shaped, leaves not spine-tipped. *S.J. De Groot* 11264. First collection in study area.
- KRASCHENINNIKOVIA LANATA* (Pursh) A. Meeuse & A. Smit. Winter fat. Subshrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland and other habitats. Rocky slopes. Common. Entire plant covered densely with stellate hairs. *H.L. Bell* 1420.
- * *SALSOLA PAULSENII* Litv. Barbwire Russian thistle. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, *Pinus monophylla*-*Juniperus osteosperma* Woodland. Common on the east side of the main Eureka Dune and north end of the Eureka Valley at the mouth of Cucomungo Canyon. Noxious weed, becoming more abundant. Leaves spine tipped, bract wings less than 0.3 cm. *H.L. Bell* 1681, see discussion of non-native taxa in text.
- SUAEDA NIGRA* (Raf.) J.F. Macbr. Bush seepweed. Shrub. *Atriplex* spp.-*Suaeda nigra* Shrubland. Alkaline playa west of main Eureka Dune. Common. Bracts shorter than fleshy leaves. *H.L. Bell* 840.
- TIDESTROMIA SUFRUTICOSA* (Torr.) Standl. var. *oblongifolia* (S. Watson) Sanch. Pino & Flores Oliv. Honeysweet. Subshrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Entrance to Hanging Rock Canyon along Big Pine to Death Valley Road. More common in Riverside and San Diego Counties. Stems persistently woolly with forked hairs, leaves opposite. *H.L. Bell* 823.

APIACEAE

- ◆ *CYMOPTERUS ABORIGINUM* M.E. Jones. Indian parsnip. Perennial. Last Chance Mountains, 1 mile south of Willow Springs. *J.C. Roos* 6435 !, 19 June 1955 (RSA). Leaves finely hairy, umbels dense with white corollas.
- CYMOPTERUS CINERARIUS* A. Gray. Gray's cymopterus. Perennial. Sparse *Pinus monophylla* Woodland. White limestone talus on north slope of Last Chance Peak. Uncommon. Leaves minutely hairy, fruit glabrous. *S.J. De Groot* 9952.
- § *CYMOPTERUS GILMANII* C.V. Morton. Gilman's cymopterus. Short-lived perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Loretto Mine Road at the mouth of Horse Thief Canyon and locally common on tops of ridges next to road south of Crater. CRPR status 2B.2. Inflorescence lacks bracts, leaves glaucous, lobed but not pinnate. *H.L. Bell* 1273.
- § *CYMOPTERUS MULTINERVATUS* (J.M. Coult. & Rose) Tidestr. Purple-nerve cymopterus. Short-lived perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. South-facing limestone outcrop on Big Pine to Death Valley Road in Last Chance Range. CRPR status 2B.3. Inflorescence bracts purple nerved, pedicels < 1 mm. *H.L. Bell* 1340. First collection from the study area, range extension to the north.
- CYMOPTERUS PURPURASCENS* (A. Gray) M.E. Jones. Purple cymopterus. Short-lived perennial. Desert Scrub. Ridgeline in northern Last Chance Range. Occasional in Inyo County, patchy. Bracts and bractlets white, pedicels ≥ 3 mm. *S.J. De Groot* 11295.
- LOMATIUM FOENICULACEUM* (Nutt.) J.M. Coult. & Rose subsp. *FIMBRIATUM* W.L. Theob. Desert biscuitroot. Short-lived perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. North-facing slope in canyon to Last Chance Spring, east of Last Chance Spring. Locally abundant but uncommon in rest of California. Leaves hairy to tomentose, segments many and linear, corolla yellow. *H.L. Bell* 1333.
- ◆ § *LOMATIUM FOENICULACEUM* (Nutt.) J.M. Coult. & Rose subsp. *MACDOUGALII* (J.M. Coult. & Rose) W.L. Theob. MacDougal's lomatium. Perennial. "Last Chance Mountains, 2 miles northeast of Willow Spring." CRPR status 2B.2. *J.C. Roos* 6403, 17 June 1955. (UCR).
- LOMATIUM NEVADENSE* (S. Watson) J.M. Coult. & Rose var. *NEVADENSE*. Nevada biscuitroot. Perennial. *Coleogyne ramosissima*-*Pinus monophylla* Shrubland. Rocky ridgeline of gray limestone. Common in Inyo County and in eastern California but patchy locally. Corolla white. *S.J. De Groot* 11211.
- LOMATIUM PARRYI* (S. Watson) J.F. Macbr. Parry's lomatium. Tap-rooted perennial. *Pinus monophylla* woodland. Gray limestone talus slope in northern Last Chance Range. Occasional in Inyo County, patchy in Last Chance Range. Leaf segments few and wide, corolla yellow. *S.J. De Groot* 11206. Four previous collections from the study area, the last in 1978.

APOCYNACEAE

- ◆ *AMSONIA TOMENTOSA* Torr. & Frém. Woolly bluestar. Semi-woody perennial. "West slope of Last Chance Range, east of Eureka Valley Dunes." *M. DeDecker* 4228 !, 10 May 1977 (RSA). Four collections from the study area, last from 1978, plants glabrous.
- ◆ *ASCLEPIAS EROSA* Torr. Desert milkweed. Perennial. "Eureka Dunes." *B.M. Pavlik* 44, 12 July 1978 (DAV). Single collection from the study area, seeds 10–13 mm.
- ASCLEPIAS FASCICULARIS* Decne. Narrow leaf milkweed. Perennial. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range, between the road and seep. Highly disturbed, wet soil. Occasional in Inyo County, common in California. Horn exceeding hood, long narrow leaves in whorls. *S.J. De Groot* 11333.

ASTERACEAE

- ACAMPTOPAPPUS SHOCKLEYI* A. Gray. Shockley's goldenhead. Subshrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Sandy bajadas and washes. Common. Heads radiate, involucre bell shaped to hemispheric. *H.L. Bell* 1238.

- AMBROSIA DUMOSA (A. Gray) W.W. Payne. White bur-sage. Monoecious shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Many habitats, widespread. Male inflorescences emerge first, fruit with spines. *H.L. Bell* 626.
- § AMBROSIA MONOGYRA (Torr. & A. Gray) Strother & B.G. Baldwin. Singlewhorl burrobrush. Monoecious shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Braided, gravelly washes at Crankshaft Crossing at north end of Death Valley. CRPR status 2B.2. Bur wings in single whorl. *H.L. Bell* 1538.
- AMBROSIA ×PLATYSPINA (Seaman) Strother & B.G. Baldwin. Hybrid bur-sage. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Broad sandy wash running from Inyo Mountain foothills into the Eureka Valley. Occasional. Wings of burr spiraled and spine tipped. *S.J. De Groot* 11007. Hybrid between *A. dumosa* and *A. salsola*.
- AMBROSIA SALSOLA (Torr. & A. Gray) Strother & B.G. Baldwin var. SALSOLA. Common burrobrush. Monoecious shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Many habitats, widespread. Bur wings in spiral. *H.L. Bell* 621.
- AMPHIPAPPUS FREMONTII Torr. & A. Gray. var. FREMONTII. Chaff bush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas, washes, and outcrops. Common, can be locally abundant. Leaves glabrous. *S.J. De Groot* 10859.
- ♦ ARTEMISIA BIGELOVII A. Gray. Bigelow sagebrush. Subshrub. “Last Chance Range, Eureka Valley drainage, east of the north end of the Eureka Sand Dunes.” *M. DeDecker* 4237 !, 10 May 1977 (RSA). Heads discoid, nodding.
- ARTEMISIA NOVA A. Nelson. Black sagebrush. Shrub. *Pinus monophylla* Woodland. Highly disturbed narrow canyon surrounding Last Chance Spring. Occasional. Phyllaries straw colored, resinous, many narrow, erect inflorescence branches. *H.L. Bell* 1734.
- ARTEMISIA SPINESCENS D.C. Eaton. Budsage. Shrub. *Coleogyne ramosissima-Pinus monophylla* Shrubland. Rocky outcrop along road to Crater sulfur mine. Occasional. Plant compact, mounding; older branches become thorny. *H.L. Bell* 1577.
- ARTEMISIA TRIDENTATA Nutt. subsp. TRIDENTATA. Big sagebrush. Shrub. Habitat mixed, in zone between *Larrea tridentata-Ambrosia dumosa* Shrubland and *Pinus monophylla* Woodland. Disturbed slope at north end of Last Chance Range. Widespread, common. Branches erect, fruit glan-dular, plant generally > 4 dm. *H.L. Bell* 1702.
- ARTEMISIA TRIDENTATA Nutt. subsp. WYOMINGENSIS Beetle & A.L. Young. Wyoming sagebrush. Shrub. Desert Scrub. Narrow steep-walled canyon in Last Chance Range. Uncommon. Phyllaries tomentose, plant generally < 4 dm. *S.J. De Groot* 10787.
- ATRICHOSERIS PLATYPHYLLA (A. Gray) A. Gray. Gravel ghost. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy soils in bajadas and washes. Common. Leaves lie flat on soil, purple tinged, inflorescence ligulate, no pappus. *H.L. Bell* 637.
- BACCHARIS SERGILOIDES A. Gray. Desert baccharis. Shrub. *Pinus monophylla* Woodland. Highly disturbed area at Last Chance Spring. More common in southern California counties. Branches erect, glabrous. *H.L. Bell* 1738.
- BAHIOPSIS RETICULATA (S. Watson) E.E. Schill. & Panero. Death Valley Goldeneye. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Gravelly bajadas and washes. Common in northern Mojave Desert. Leaves densely hairy, veins prominent abaxially. *H.L. Bell* 714.
- BAILEYA PLENIRADIATA Harv. & A. Gray. Woolly desert marigold. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Sandy and gravelly bajadas and washes. Common. Rays obovate, entire to shallowly lobed. *H.L. Bell* 676.
- BRICKELLIA ATRACTYLOIDES A. Gray var. ARGUTA (B.L. Rob.) Jeps. Pungent brickellbush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Rocky outcrops. Common. Outer phyllaries lanceolate, entire. *H.L. Bell* 1085.
- BRICKELLIA LONGIFOLIA S. Watson var. LONGIFOLIA. Longleaf brickellbush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Leaf flat, not folded or sickle shaped. *H.L. Bell* 1326.
- BRICKELLIA LONGIFOLIA S. Watson var. MULTIFLORA (Kellogg) Cronquist. Longleaf brickellbush. Shrub. *Coleogyne ramosissima-Pinus monophylla* Shrubland. Disturbed area near Crater sulfur mine. Uncommon. Leaf folded along midvein. *H.L. Bell* 1768.
- BRICKELLIA MICROPHYLLA (Nutt.) A. Gray var. SCABRA A. Gray. Little-leaf brickellbush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Rocky outcrops. Uncommon. Head generally 8–15 flowered. *H.L. Bell* 855.
- BRICKELLIA OBLONGIFOLIA Nutt. var. LINIFOLIA (D.C. Eaton) B.L. Rob. Mojave brickellbush. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional, but can be locally frequent. Petiole short or absent, leaves oblong, entire. *H.L. Bell* 1532.
- CALYCOSERIS WRIGHTII A. Gray. White tack-stem. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Desert pavement on east-facing slope of Inyo Mountains. More common in southern California counties. White ligules; tack-shaped, straw-colored glands on peduncle. *H.L. Bell* 1007a.
- CHAENACTIS CARPHOCLINIA A. Gray var. CARPHOCLINIA. Pebble pincushion. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, and other habitats. Bajadas, washes, rocky hillsides. Common. Phyllary tips needle-like, red. *H.L. Bell* 1305.
- CHAENACTIS DOUGLASII (Hook.) Hook. & Arn. var. DOUGLASII. Dusty maidens. Short-lived perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland and other habitats. Rocky hillsides and washes. Common. Leaves basal and cauline. *H.L. Bell* 1123.
- CHAENACTIS FREMONTII A. Gray. Fremont pincushion. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland. Bajadas and washes. Common. Pappus tips visible among buds, outer corollas larger. *H.L. Bell* 991 (RSA).
- CHAENACTIS MACRANTHA D.C. Eaton. Mojave pincushion. Annual. At ecotone between *Larrea tridentata-Ambrosia dumosa* and *Coleogyne ramosissima* Shrublands. Sandy bajadas. Occasional. Corolla open at night, outer corollas = inner corollas, anthers included. *H.L. Bell* 1432.
- CHAENACTIS STEVIOIDES Hook. & Arn. Desert pincushion. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Outer phyllaries glandular hairy, outer corollas enlarged. *H.L. Bell* 663.
- ♦ CHAENACTIS XANTIANA A. Gray. Fleshy pincushion. Annual. “Last Chance Mountains, 2 miles NE of Willow Springs.” *J.C. Roos* 6418 !, 17 June 1955 (RSA). Longest phyllaries 10–18 mm, non-glandular.
- § CHAETADELPHA WHEELERI S. Watson. Wheeler’s dune-broom. Rhizomatous perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. East margin of Marble Dune at notch in the Saline Range on the west side of the Eureka Valley. CRPR status 2B.2. Leaves linear, entire to scale-like, phyllaries in two series, inner linear with membranous edges, outer scale-like. *H.L. Bell* 1154.
- CHAETOPAPPA ERICOIDES (Torr.) G.L. Nesom. Rose-heath. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Last Chance Range: 470 m southeast of Last Chance Mountain. Common in northern Inyo County. Ray flowers 12–21, corolla white to pink. *D.A. York* 2650 !, 30 May 2001 (DEVA).
- CHRYSOETHAMNUS VISCIDIFLORUS (Hook.) Nutt. subsp. PUBERULUS (D.C. Eaton) H.M. Hall & Clem. Yellow rabbitbrush. Shrub. *Pinus monophylla-Juniperus osteosperma* Woodland, *Yucca brevifolia* Woodland. Calcareous slope at north end of Last Chance Range. Common. Leaves hairy. *S.J. De Groot* 11276.
- ♦ CHRYSOETHAMNUS VISCIDIFLORUS (Hook.) Nutt. subsp. VISCIDIFLORUS. Sticky leafed rabbitbrush. Shrub. “Last Chance Mts. 2 miles NE of Willow Spring along California Nevada Border.” *J.C. Roos* 6544 !, 25 Aug 1955 (RSA). Leaves glabrous.
- CIRSIMUM MOHAVENSE (Greene) Petr. Mojave thistle. Biennial or perennial. *Pinus monophylla* Woodland. In damp soil below Last Chance Spring. Occasional around seeps. Leaves decurrent as spiny wings; phyllaries tightly appressed, only spiny tips spreading. *H.L. Bell* 1735.
- CIRSIMUM NEOMEXICANUM A. Gray. Desert thistle. Biennial. Mixed desert scrub. Rocky wash in narrow side canyon in Last Chance Range. Occasional in Inyo County. Involucre wider than long, phyllaries ascending to

- spreading above appressed base, outer phyllaries often reflexed. *S.J. De Groot 10866*.
- CREPIS INTERMEDIA A. Gray. Limestone hawksbeard. Tap-rooted perennial. *Pinus monophylla-Juniperus osteosperma* Woodland, Calcareous Rock Outcrops. Gentle hillside on northeast side of Last Chance Range. Occasional in northern Inyo County. Involucre narrowly cylindric, 3–5 mm in diameter. *S.J. De Groot 11140*.
- ◆ § CUNICULOTINUS GRAMINEUS (H.M. Hall) Urbatsch, R.P. Roberts & Neubig. Panamint rock goldenrod. Subshrub. “Last Chance Mountains, northeast portion.” CRPR status 2B.3. *M. Decker 4312* !, 21 June 1977 (RSA). Phyllaries graduated, oblong to ovate, corolla 9.5–11.5 mm.
- DICORIA CANESCENS A. Gray. Desert twinbugs. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Eureka dunes and dune margins. Common on dunes and sand. Fall blooming. *H.L. Bell 846*.
- DIETERIA CANESCENS (Pursh) Nutt. var. LEUCANTHEMIFOLIA (Greene) D.R. Morgan & R.L. Hartm. Hoary aster. Annual or short-lived perennial. *Pinus monophylla-Juniperus osteosperma* Woodland, Desert Scrub. Shallow wash southeast of Cucomungo Canyon. Uncommon. Stems with stalked glands. *S.J. De Groot 11330*.
- ENCELIA ACTONI Elmer. Acton brittlebush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Heads solitary, ray flowers shallowly toothed. *H.L. Bell 800*.
- ENCELIA FARINOSA A. Gray ex Torr. Brittlebush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Heads clustered in panicle, leaves tomentose. *H.L. Bell 614*.
- ENCELIA VIRGINENSIS A. Nelson. Virgin River brittlebush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional in Inyo County. Leaves sparsely hairy, ray flowers deeply toothed. *H.L. Bell 725*.
- § ENCELIOPSIS NUDICAULIS (A. Gray) A. Nelson. Naked-stemmed daisy. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Limestone outcrops. CRPR status 4.3. Petioles not winged. *H.L. Bell 1339*.
- ERICAMERIA COOPERI (A. Gray) H.M. Hall var. COOPERI. Cooper’s goldenbush. Shrub. *Pinus monophylla-Yucca brevifolia* Woodland. Wash running east out of Inyo Mountain foothills into the Eureka Valley, also in Last Chance Canyon. Common in scattered patches. Ray flowers 0–3, spring flowering. *S.J. De Groot 11003*.
- ERICAMERIA CUNEATA (A. Gray) McClatchie var. SPATHULATA (A. Gray) H.M. Hall. Cliff goldenbush. Shrub. Desert Scrub. Narrow side canyon in Last Chance Range. Uncommon in northern Inyo County, rare patches. Leaves spoon shaped. *S.J. De Groot 10860*.
- ERICAMERIA LINEARIFOLIA (DC.) Urbatsch & Wussow. Interior goldenbush. Shrub. *Coleogyne ramosissima* Shrubland. Bajadas and washes. Common in Southern Sierra Nevada and coastal ranges, occasional in northern Mojave Desert. Phyllaries of equal length, 12–18 ray flowers, spring flowering. *H.L. Bell 1421*.
- ERICAMERIA NAUSEOSA (Pursh) G.L. Nesom & G.I. Baird var. CERUMINOSA (Durand & Hilg.) G.L. Nesom & G.I. Baird. Desert rabbitbrush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Margin of main Eureka Dune. Uncommon. Phyllaries unequal, tips recurved. *H.L. Bell 1320*.
- ◆ ERICAMERIA NAUSEOSA (Pursh) G.L. Nesom & G.I. Baird var. HOLOLEUCA (A. Gray) G.L. Nesom & G.I. Baird. White rabbitbrush. Shrub. “Last Chance Mountains, 0.2 miles E of Willow Spring.” *J.C. Roos 6541* !, 24 Aug 1955. (RSA). Corolla lobes 0.5–1 mm.
- ERICAMERIA NAUSEOSA (Pursh) G.L. Nesom & G.I. Baird var. OREOPHILA (A. Nelson) G.L. Nesom & G.I. Baird. Great Basin rabbitbrush. Shrub. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Uncommon in northern Mojave Desert. Phyllaries unequal, tips erect. *H.L. Bell 1722*.
- ERICAMERIA NAUSEOSA (Pursh) G.L. Nesom & G.I. Baird var. SPECIOSA (Nutt.) G.L. Nesom & G.I. Baird. Showy rabbitbrush. Shrub. *Pinus monophylla-Coleogyne ramosissima* Woodland. Disturbed area near Crater sulfur mine. Uncommon in northern Mojave Desert. Stem slightly hairy, leaves present at flowering. *H.L. Bell 1767*.
- ERICAMERIA PANICULATA (A. Gray) Rydb. Black-banded rabbitbrush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Distinctive black bands frequently found on stems, ray flowers 0, foliage dotted with resin pits. *H.L. Bell 618*.
- ERIGERON APHANACTIS (A. Gray) Greene var. APHANACTIS. Rayless shaggy fleabane. Perennial. *Pinus monophylla-Coleogyne ramosissima* Woodland. Disturbed area near Crater sulfur mine. Occasional, locally frequent. Pistillate flowers present, plant openly branched. *H.L. Bell 1584*.
- ◆ ERIGERON ARGENTATUS A. Gray. Silver fleabane. Perennial. “Last Chance Mountains 2 miles NE of Willow Spring.” *J.C. Roos 6424* !, 18 June 1955 (RSA). Basal leaves tufted, persistent.
- ERIGERON BREWERI A. Gray var. BREWERI. Brewer’s daisy. Perennial. *Pinus monophylla-Juniperus osteosperma-Yucca brevifolia* Woodland. Desert scrub. Hillside near head of Last Chance Canyon. Common in Sierra Nevada, uncommon in eastern Inyo County. Phyllaries densely glandular. *S.J. De Groot 11146*. First collection in the study area.
- ERIGERON BREWERI A. Gray var. PORPHYRETICUS (M.E. Jones) Cronquist. Brewer’s fleabane. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Phyllaries not glandular. *H.L. Bell 899*.
- ◆ ERIGERON CLOKEYI Cronquist var. PINZLIAE G.L. Nesom. Pinzl’s fleabane. Perennial. “Whitetop Peak, summit Last Chance Mountains.” *J.C. Roos 6482* !, 21 July 1955 (RSA). Basal leaves 20–80 mm, phyllaries green.
- GLYPTOPLEURA MARGINATA D.C. Eaton. Carveseed. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, Desert Scrub. Volcanic plateau on east side of Last Chance Range. Occasional. White ligules 4–10 mm. *S.J. De Groot 10832*.
- GUTIERREZIA MICROCEPHALA (DC.) A. Gray. Sticky snakeweed. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Ray flowers 1–2. *H.L. Bell 700*.
- GUTIERREZIA SAROTHRÆ (Pursh) Britton & Rusby. Matchweed. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in northern Mojave Desert. Ray flowers 2–8. *H.L. Bell 1218*.
- HAZARDIA BRICKELLIODES (S.F. Blake) W.D. Clark. Brickell goldenbush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Leaf teeth and tips spiny. *H.L. Bell 799*.
- HECASTOCLEIS SHOCKLEYI A. Gray. Prickleleaf. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Canyon mouths and tops of bajadas, north-facing sites. Inflorescences surrounded by white, spiny bracts. *H.L. Bell 1272*.
- HELIOMERIS MULTIFLORA Nutt. var. NEVADENSIS (A. Nelson) W.F. Yates. Nevada goldeneye. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland, *Coleogyne ramosissima* Shrubland. South-facing slopes. Uncommon generally, but locally abundant in Last Chance Canyon. Corolla yellow-orange, ray flowers showy, entire. *H.L. Bell 1519*.
- LAYIA GLANDULOSA (Hook.) Hook. & Arn. White layia. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Gravelly wash. Uncommon in eastern Inyo County. Ray flowers white. *H.L. Bell 1627*.
- LAYIA PLATYGLOSSA (Fisch. & C.A. Mey.) A. Gray. Tidy tips. Annual. *Coleogyne ramosissima* Shrubland. Gravelly wash. Common. Ray flowers yellow (may have white tips). *H.L. Bell 1415*.
- ◆ LEPIDOSPARTUM LATISQUAMUM S. Watson. Nevada broomsage. Shrub. “Willow Spring at north end of Last Chance Range.” *J.C. Roos 6500* !, 22 July 1955 (RSA), 3 collections from study area, last collected in 1978. Leaves of flowering stem 20–30 mm, thread-like.
- LOGFIA DEPRESSA (A. Gray) Holub. Dwarf cottonrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Shallow bajada. Uncommon in northern Inyo County. Short, tomentose annual with yellow flowers. *H.L. Bell 1887*.
- MALACOTHRIX COULTERI Harv. & A. Gray. Snake’s-head. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Volcanic plateau on east side of Last Chance Range. Uncommon in northern Inyo County. Cauline leaves with ear-like basal lobe. *S.J. De Groot 10830*. First collection in the study area.

- MALACOTHRIX GLABRATA (D.C. Eaton) A. Gray. Desert dandelion. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Leaf lobes thread-like. *H.L. Bell* 632.
- MALACOTHRIX SONCHOIDES (Nutt.) Torr. & A. Gray. Sowthistle desert dandelion. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, *Dicoria canescens*-*Abronia turbinata* Sparsely Vegetated Alliance. Shallow sand on margin of dunes. Common in northern Inyo County. Leaves lobed and toothed. *H.L. Bell* 684.
- MONOPTILON BELLIDIFORME Torr. & A. Gray. Small desert star. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Pappus a plumose bristle. *H.L. Bell* 1155.
- MONOPTILON BELLIOIDES (A. Gray) H.M. Hall. Mojave desert star. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Pappus of non-plumose bristles and scales. *H.L. Bell* 646.
- PECTIS PAPPOSA Harv. & A. Gray var. PAPPOSA. Chinch-weed. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Sandy washes. Uncommon in northern Mojave Desert. Forms small mounds, foliage with embedded oil glands. *H.L. Bell* 816.
- PEUCEPHYLLUM SCHOTTII A. Gray. Pygmy cedar. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland with *Ephedra* spp. Rocky outcrops. Common. Leaves linear, thick, glandular. *H.L. Bell* 928.
- PLEIACANTHUS SPINOSUS (Nutt.) Rydb. Thorny skeletonweed. Subshrub. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Saddle near head of Last Chance Canyon. Common in eastern California, patchy. Ligules 3–5, pink to lavender. *S.J. De Groot* 11332.
- PLUCHEA SERICEA (Nutt.) Coville. Arrow weed. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Seeps, bajadas and washes. Occasional in northern Mojave Desert. Non-glandular. *H.L. Bell* 1487.
- PRENANTHELLA EXIGUA (A. Gray) Rydb. Brightwhite. Annual. *Larrea tridentata*-*Ambrosia dumosa* and *Coleogyne ramosissima* Shrublands. Bajadas and washes. Occasional in northern Mojave Desert. Pappus of multiple white bristles. *H.L. Bell* 1255.
- PSATHYROTES ANNUA (Nutt.) A. Gray. Annual turtleback. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Gravelly washes. Occasional in northern Mojave Desert. Plant sparsely scaly-hairy. *H.L. Bell* 1549.
- PSATHYROTES RAMOSISSIMA (Torr.) A. Gray. Turtleback. Annual or perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Plant densely hairy. *H.L. Bell* 1615.
- RAFINESQUIA NEOMEXICANA A. Gray. Desert chicory. Annual. At ecotone between *Larrea tridentata*-*Ambrosia dumosa* and *Coleogyne ramosissima* Shrublands. Bajadas and washes. Common. Pappus bristles plumose and entangled, peduncle glabrous. *H.L. Bell* 1430.
- SENECIO FLACCIDUS Less. var. MONOENSIS (Greene) B.L. Turner & T.M. Barkley. Smooth threadleaf ragwort. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Plant glabrous. *H.L. Bell* 1279.
- SOLIDAGO CONFINIS A. Gray. Southern goldenrod. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Occasional in Inyo County. Inflorescence generally club shaped. *H.L. Bell* 1728.
- * SONCHUS OLERACEUS L. Common sow thistle. Annual. *Pinus monophylla* Woodland. Disturbed area below Last Chance Spring. Uncommon in Inyo County. Lobes of clasping leaves acute. *H.L. Bell* 1387.
- ◆ STENOTUS ACAULIS (Nutt.) Nutt. Stemless goldenweed. Cespitose perennial. “Summit ridge Last Chance Mountains, 2 mi. W of Last Chance Spring.” *J.C. Roos* 6445, 19 June 1955 (RSA).
- STEPHANOMERIA EXIGUA Nutt. subsp. CORONARIA (Greene) Gottlieb. Whiteplume wirelettuce. Annual. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Saddle at north end of Last Chance Range. Common in Sierra Nevada. Outer phyllaries appressed, fruit grooved. *S.J. De Groot* 11322. First collection from the study area, range extension to the east.
- STEPHANOMERIA PAUCIFLORA (Torr.) A. Nelson. Wire-lettuce. Perennial to subshrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Cauline leaves bract-like, withered at flowering. *H.L. Bell* 722.
- STYLOCLINE INTERTEXTA Morefield. Mojave neststraw. Annual. At ecotone between *Larrea tridentata*-*Ambrosia dumosa* and *Coleogyne ramosissima* Shrublands. Bajadas and washes. Uncommon in northern Mojave Desert. Palea body cartilaginous. *H.L. Bell* 1433. First collection from the study area.
- STYLOCLINE MICROPOIDES A. Gray. Desert neststraw. Annual. *Yucca brevifolia* Woodland. North end of Last Chance Range. Uncommon in northern Inyo County. Palea body papery. *H.L. Bell* 1672. First collection from the study area.
- * TARAXACUM OFFICINALE F.H. Wigg. Common dandelion. Annual. *Pinus monophylla* Woodland. Disturbed area below Last Chance Spring. Uncommon in eastern Inyo County. Fruit olive brown to gray. *H.L. Bell* 1397.
- TETRADYMIA AXILLARIS A. Nelson var. AXILLARIS. Catclaw horsebrush. Shrub. *Coleogyne ramosissima*-*Pinus monophylla* Shrubland. Disturbed area near Crater sulfur mine. Uncommon. Peduncle glabrous. *H.L. Bell* 1600.
- TETRADYMIA AXILLARIS A. Nelson var. LONGISPINA (M.E. Jones) Strother. Longspine horsebrush. Shrub. *Coleogyne ramosissima* Shrubland. Bajadas and washes. Occasional. Peduncle tomentose. *H.L. Bell* 1423.
- ◆ TETRADYMIA GLABRATA Torr. & A. Gray. Little leaf horsebrush. Shrub. “Last Chance Range. 3 mi. SE from Eureka Dune (west base of Last Chance Range).” *D.W. Taylor* 7111, 26 May 1978 (JEPS). Stem not spiny.
- TOWNSENDIA SCAPIGERA D.C. Eaton. Tufted townsendia. Annual. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Hillside on east side of Last Chance Range. Uncommon. Fruit with spreading hairs. *S.J. De Groot* 11216. First collection from the study area.
- UROPAPPUS LINDLEYI (DC.) Nutt. Silverpuffs. Annual. *Coleogyne ramosissima* Shrubland. Sandy washes. Common. Fruits with awned scales. *H.L. Bell* 1418.
- XYLORHIZA TORTIFOLIA (Torr. & A. Gray) Greene var. TORTIFOLIA. Mojave aster. Subshrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas, washes, rocky outcrops. Common. Peduncle 8–25 cm. *H.L. Bell* 604.

BORAGINACEAE

- AMSINCKIA TESSELLATA A. Gray var. TESSELLATA. Desert fiddleneck. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Anthers appressed to stigma, calyx lobes 3 or 4. *H.L. Bell* 652.
- CRYPTANTHA BARBIGERA (A. Gray) Greene var. BARBIGERA. Bearded cryptantha. Annual. *Pinus monophylla*-*Yucca brevifolia* Woodland. South-southwest-facing slope along Last Chance Canyon wash through badlands-like hills. Uncommon in Inyo County. Nutlets 1.5–2 mm, tubercle tips not translucent. *S.J. De Groot* 11153b. First collection from the study area, range extension to the northeast.
- CRYPTANTHA DECIPIENS (M.E. Jones) A. Heller. Gravel cryptantha. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Nutlets 1 or 2. *H.L. Bell* 743.
- CRYPTANTHA MARITIMA (Greene) Greene. Guadalupe cryptantha. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, Desert scrub. Bajadas, washes and outcrops. Common in southern Inyo County. Stem erect, red-brown, inflorescence bracted. *S.J. De Groot* 11022b. First collection from the study area.
- CRYPTANTHA MOHAVENSIS (Greene) Greene. Mojave cryptantha. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in eastern Inyo County. Leaves linear to oblong, with bristly hairs with bulbous bases. *H.L. Bell* 1011.
- CRYPTANTHA NEVADENSIS A. Nelson & P.B. Kenn. var. NEVADENSIS. Nevada cryptantha. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Sprawling, growing through other plants. *H.L. Bell* 698.
- CRYPTANTHA NEVADENSIS A. Nelson & P.B. Kenn. var. RIGIDA I.M. Johnst. Nevada cryptantha. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Bajadas, limestone scree. Uncommon in

- Inyo County. Plant erect. *H.L. Bell 1068*. First collection from the study area, range extension to the northeast.
- CRYPTANTHA PTEROCARYA (Torr.) Greene var. CYCLOPTERA (Greene) J.F. Macbr. Tucson cryptantha. Annual. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Highly disturbed, wet soil. Uncommon in northern Inyo County. Nutlets similar, all winged. *H.L. Bell 1653*. First collection from the study area.
- CRYPTANTHA PTEROCARYA (Torr.) Greene var. PTEROCARYA. Wing-nut cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, Sparse *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas and washes. Common. Nutlets dissimilar, one winged, others not. *H.L. Bell 627*.
- CRYPTANTHA PTEROCARYA (Torr.) Greene var. PURPUSII Jeps. Purpus' cryptantha. Annual. *Pinus monophylla-Yucca brevifolia* Woodland, Desert scrub. Bank along wash in Last Chance Canyon. Nutlet wing narrow. Common in the Sierra Nevada. *S.J. De Groot 11181*. First collection from the study area, range extension to the northeast.
- CRYPTANTHA RECURVATA Coville. Curved nut cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, Northern Mojave Desert Scrublands. Bajadas and washes. Common in northern Inyo County. Nutlet curved. *H.L. Bell 761*.
- CRYPTANTHA SCOPARIA A. Nelson. Gray cryptantha. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Ridge at north end of Last Chance Range. Uncommon. Nutlets finely papillate. *S.J. De Groot 11288*.
- CRYPTANTHA UTAHENSIS (A. Gray) Greene. Scented cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Rocky washes. Common. Nutlet 1, margin sharp-angled to slightly winged, flower white with yellow center. *H.L. Bell 605*.
- EREMOCARYA MICRANTHA (Torr.) Greene var. MICRANTHA. Redroot cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Forms a low cushion, roots staining red. [Syn. = *Cryptantha micrantha* (Torr.) I.M. Johnst. var. *micrantha*]. *H.L. Bell 670*.
- GRENEOCHARIS CIRCUMSCISSA (Hook. & Arn.) Rydb. var. CIRCUMSCISSA. Cushion cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Calyx cup-like in fruit. [Syn. = *Cryptantha circumscissa* (Hook. & Arn.) I.M. Johnst. var. *circumscissa*]. *H.L. Bell 648*.
- JOHNSTONELLA ANGUSTIFOLIA (Torr.) Hasenstab & M.G. Simpson. Narrowleaf cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common, at north end of range in northern Inyo County. Plant erect. [Syn. = *Cryptantha angustifolia* (Torr.) Greene]. *H.L. Bell 651*.
- JOHNSTONELLA INAEQUATA (S. Watson) Brand. Panamint cryptantha. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Nutlets narrowly triangular, one larger than others. [Syn. = *Cryptantha inaequata* I.M. Johnst.]. *H.L. Bell 1300*.
- JOHNSTONELLA RACEMOSA (I.M. Johnst.) Brand. Bushy cryptantha. Perennial becoming shrubby. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional in Inyo County. Branched, spreading. [Syn. = *Cryptantha racemosa* (A. Gray) Greene]. *H.L. Bell 1230*.
- LAPPULA REDOWSKII (Hornem.) Greene var. CUPULATA (A. Gray) M.E. Jones. Crowned stickseed. Annual. Desert Scrub. Last Chance Range, spur road at mine site 0.2 mi west of Death Valley Road at summit. Uncommon. Nutlet margins prickles wider at base and fused into crown. *J.M. André 29385* !, 21 Apr 2014 (RSA).
- OREOCARYA CONFERTIFLORA Greene. Basin yellow catseye. Perennial. *Pinus monophylla* Woodland. Narrow canyon to Last Chance Spring. Common. Corolla yellow, nutlets four, similar. [Syn. = *Cryptantha confertiflora* (Greene) Payson]. *H.L. Bell 1367*.
- OREOCARYA FLAVOCULATA A. Nelson. Yellow-eyed cryptantha. Perennial. *Coleogyne ramosissima-Pinus monophylla* Shrubland. Disturbed soils in Crater sulfur mine area. Occasional. Cespitose, white corolla. [Syn. = *Cryptantha flavoculata* (A. Nelson) Payson]. *H.L. Bell 1604*.
- OREOCARYA HOFFMANNII (I.M. Johnst.) Abrams. White Mountains cryptantha. Short-lived perennial. Sparse *Pinus monophylla-Juniperus osteosperma* Woodland. Limestone outcrop. Locally common. Leaves basal, roundish, tomentose abaxially. [Syn. = *Cryptantha hoffmannii* I.M. Johnst.]. *S.J. De Groot 8989*.
- OREOCARYA HUMILIS (A. Gray) Greene. Low cryptantha. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Last Chance Range: 180 m east of Last Chance Mountain. Uncommon. Nutlets 2–4, 3–4 mm, uniformly gray. [Syn. = *Cryptantha humilis* (A. Gray) Payson]. *D.A. York 2654* !, 30 May 2001 (DEVA).
- § OREOCARYA TUMULOSA Payson. New York Mountains cryptantha. Perennial. Calcareous Rock Outcrops. Last Chance Range, Dedeckera Canyon. CRPR status 4.3. *M. DeDecker 6276* !, 24 April 1991 (RSA). Long lived perennial with woody caudex, corolla early deciduous.
- OREOCARYA VIRGINENSIS (M.E. Jones) Macbr. Virgin River cryptantha. Short-lived perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common in northern Mojave Desert. Stem with yellow bristles. [Syn. = *Cryptantha virginensis* (M.E. Jones) Payson]. *H.L. Bell 1289*.
- PECTOCARYA HETEROCARPA (I.M. Johnst.) I.M. Johnst. Mixed nut pectocarya. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. East-facing slope of Inyo Mountains, disturbed site among mine tailings. Uncommon in Inyo County. Cauline nutlets paired, one pair incurved, one pair recurved. *H.L. Bell 995*.
- PECTOCARYA PLATYCARPA (Munz & I.M. Johnst.) Munz & I.M. Johnst. Wide toothed pectocarya. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in Inyo County. Nutlets recurved, margin teeth fused at bases. *H.L. Bell 1450*.
- PECTOCARYA RECURVATA I.M. Johnst. Arched nut pectocarya. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Shallow, rocky wash. Occasional. Nutlets strongly recurved, margins dentate. *H.L. Bell 636*.
- PECTOCARYA SETOSA A. Gray. Round nut pectocarya. Annual. *Coleogyne ramosissima* Shrublands. Shallow wash running east from Last Chance Range. Generally common, but rare in study area. Nutlets paired, round to obovate. *H.L. Bell 1835b* (RSA).
- PLAGIOBOTHRYUS JONESII A. Gray. Mojave popcorn flower. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Nutlet cobblestone-like, no tubercles. *H.L. Bell 603*.
- PLAGIOBOTHRYUS KINGII (S. Watson) A. Gray var. KINGII. Southern Great Basin popcorn flower. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Limestone outcrops. Uncommon. Inflorescence elongate in fruit. *H.L. Bell 1247*.

BRASSICACEAE

- BOECHERA INYOENSIS (Rollins) Al-Shehbaz. Inyo rockcress. Short-lived perennial. *Pinus monophylla* Woodland, Calcareous Rock Outcrops. Steep talus slope of gray limestone in northern Last Chance Range. Occasional, scattered and infrequent in the study area. Pollen spheric, fruit glabrous ascending to pendent, pedicel hairy. *S.J. De Groot 11208*.
- ◆ § BOECHERA LINCOLNENSIS Windham & Al-Shehbaz. Lincoln rockcress. Perennial. "Last Chance Mts. Ca. 30–35 air mi. E Big Pine (canyon near original *Dedeckera* population)." CRPR status 2B.3. *B. Ertter & J.R. Shevock 6895*, 2 May 1987 (UC). Annotated by M. Windham and I. Al-Shehbaz. Basal leaves 1–2 mm wide, fruit pendent.
- BOECHERA PAUCIFLORA (Nutt.) Windham & Al-Shehbaz. Hairy stem rockcress. Perennial. *Coleogyne ramosissima* Shrublands. Rocky slope on east side of Last Chance Range. Rare in Inyo County. Fruit glabrous, spreading to pendent. *S.J. De Groot 10872*. First collection from the study area, range extension to the east.
- BOECHERA PAUPERCULA (Greene) Windham & Al-Shehbaz. Small flowered rockcress. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Last Chance Range: Summit of Last Chance Mountain. Uncommon in Inyo County. Cauline leaf base not lobed, fruit erect and appressed to inflorescence axis. *D.A. York 2403* !, 12 June 2000 (DEVA). Range extension to the east.
- BOECHERA PERENNANS (S. Watson) W.A. Weber. Perennial rockcress. Perennial. *Artemisia tridentata* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland. Wash on north end of Last Chance Range. Occa-

- sional. Basal leaves dentate, fruit pendent, pedicel glabrous. *S.J. De Groot 11059*.
- BOECHERA PUBERULA (Nutt.) Dorn. Silver rockcress. Short-lived perennial. *Coleogyne ramosissima* Shrubland. North-facing slope just outside the canyon to Last Chance Spring. Uncommon in northern Inyo County. Basal leaves dentate, fruit hairy, spreading to pendent. *H.L. Bell 1398*. First collection from the study area.
- BOECHERA PULCHRA (M.E. Jones ex S. Watson) W.A. Weber. Beautiful rockcress. Perennial. *Pinus monophylla-Yucca brevifolia* Woodland. Rocky wash at north end of Last Chance Range. Occasional. Stems elevated above ground surface by woody base, pedicel abruptly recurved. *S.J. De Groot 11036*.
- § BOECHERA SHOCKLEYI (Munz) Dorn. Shockley's rockcress. Perennial. *Pinus monophylla* Woodland, Calcareous Rock Outcrops. Steep talus slope of gray limestone at the north end of Last Chance Range. Infrequent. CRPR rank 2B.2. Pollen ellipsoid, fruit glabrous to glabrate, mature fruits widely arching, seeds in two rows. *S.J. De Groot 11207*.
- BOECHERA XYLOPODA Windham & Al-Shehbaz. Bigfoot hybrid rockcress. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Last Chance Range: slope above Last Chance Spring. Common. Fruit reflexed and < 7 cm, hairy on distal 2/3. *D.A. York 2358A ! 5 May 2000 (DEVA)*.
- § BOECHERA YORKII S. Boyd. Last Chance Rockcress. Perennial. Desert Scrub with *Yucca brevifolia*, Calcareous Rock Outcrops. Rocky ridge at north end of Last Chance Range. CRPR status 1B.3. Petals yellow to red, plant hairy, fruit reflexed. *S.J. De Groot 10886*.
- CARDAMINE OLIGOSPERMA Nutt. Little western bittercress. Annual, biennial. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Coastal and western Sierra Nevada distribution, uncommon in Inyo County. Basal rosette persistent. *H.L. Bell 1645*. First collection from the study area, range extension to the southeast.
- CAULANTHUS COOPERI (S. Watson) Payson. Cooper's caulanthus. Annual. Desert Scrub, *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common, locally scattered. Plant hairs appressed or missing, stem wavy, weak. *S.J. De Groot 10784*.
- CAULANTHUS CRASSICAULIS (Torr.) S. Watson. Thick stemmed wild cabbage. Perennial. *Coleogyne ramosissima* Shrublands. Shallow wash south of mouth of canyon to Last Chance Spring. Uncommon in Inyo County, relatively abundant in northern Inyo County. Stem inflated. *H.L. Bell 1535*.
- CAULANTHUS GLAUCUS S. Watson. Glaucous caulanthus. Perennial. *Pinus monophylla-Yucca brevifolia* Woodland, Calcareous Rock Outcrops. Limestone outcrops and slopes in Last Chance Range. Relatively abundant in northern Inyo County, rare elsewhere. No basal rosette, stem not inflated, petals creamy yellow. *S.J. De Groot 10855*.
- CAULANTHUS LASIOPHYLLUS (Hook. & Arn.) Payson. California mustard. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in northern Inyo County. Petals white to slightly pink, margins not wavy, fruit strongly reflexed to spreading. *H.L. Bell 1349*.
- DESCURAINIA CALIFORNICA (A. Gray) O.E. Schulz. Sierra tansymustard. Annual, biennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. East-facing slope of Inyo Mountains, with mine tailings and desert polish. Common. Fruit fusiform, both ends pointed. *H.L. Bell 993*.
- DESCURAINIA PINNATA (Walter) Britton subsp. GLABRA (Wootton & Standl.) Detling. Western tansymustard. Annual. *Yucca brevifolia* Woodland. Rocky hillside on east side of Last Chance Range. Common. Fruit club shaped. *S.J. De Groot 11157*.
- * DESCURAINIA SOPHIA (L.) Webb ex Prantl. Tansymustard. Annual. *Pinus monophylla* Woodland, *Larrea tridentata-Ambrosia dumosa* Shrubland, disturbed areas. Canyon to Last Chance Spring. Common, weedy. Fruit linear. *H.L. Bell 1393*.
- DRABA CUNEIFOLIA Nutt. ex Torr. & A. Gray. Wedgeleaf draba. Annual. Calcareous Rock Outcrops. Narrow canyon of pink, white, and gray limestone at northeast side of Last Chance Range. Uncommon in northern Inyo County. Plant subscapose. *S.J. De Groot 10803*.
- * HORNUNGIA PROCUMBENS (L.) Hayek. Prostrate hutchinsia. Annual. Seep close to Last Chance Spring. Disturbed hillside seep on northeast side of Last Chance Range. Occasional. Petals white, hairs forked. *S.J. De Groot 11221*.
- * LEPIDIUM CAMPESTRE (L.) W.T. Aiton. Field pepperweed. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, disturbed areas. Bajadas and washes. Common, weedy. Fruit notched at tip, winged, papillate. *H.L. Bell 606*.
- LEPIDIUM DENSIFLORUM Schrad. Common pepperweed. Annual, biennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Fruit deeply notched at tip. *H.L. Bell 941*.
- LEPIDIUM FREMONTII S. Watson. Desert pepperweed. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Bajadas and washes. Common. Fruit flat, shallow notch at tip. *H.L. Bell 1168*.
- LEPIDIUM LASIOCARPUM Nutt. subsp. LASIOCARPUM. Shaggy fruit pepperweed. Annual. *Pinus monophylla* Woodland, Desert Scrub. Canyon to Last Chance Spring. Occasional. Pedicel flattened. *H.L. Bell 1382*.
- NASTURTIUM OFFICINALE W.T. Aiton. Water cress. Aquatic perennial. Seep southeast of Last Chance Spring. Common, locally abundant. Seeds 2–2.5 mm wide, cauline leaves compound. *S.J. De Groot 9969*.
- PHYSARIA KINGII (S. Watson) O'Kane & Al-Shehbaz subsp. LATIFOLIA (A. Nelson) O'Kane & Al-Shehbaz. Limestone bladderpod. Perennial with caudex. *Pinus monophylla* Woodland, Calcareous Rock Outcrops. White limestone talus on northeast slope of Last Chance Mountain. Uncommon. Fruit tip round, seeds 8–16. *S.J. De Groot 9941*.
- ◆ § SIBARA DESERTI (M.E. Jones) Rollins. Desert winged rockcress. Annual. CRPR status 4.3. "Eureka Valley, gully about midway in valley." *M. DeDecker 3762 !, 22 Apr 1975 (RSA)*. One collection from the study area in CCH, plant hairy.
- * SISYMBRIUM IRIO L. London rocket. Annual. *Coleogyne ramosissima-Pinus monophylla* Shrubland. Highly disturbed area near Crater sulfur mine. Common and weedy in many areas, uncommon in northern Inyo County. Plants glabrous or sparsely hairy. *H.L. Bell 1595*.
- STANLEYA ELATA M.E. Jones. Panamint prince's plume. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Rocky washes. Common in Inyo County. Leaves oblong, entire. *H.L. Bell 1457*.
- STANLEYA PINNATA (Pursh) Britton var. PINNATA. Desert prince's plume. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Bajadas and washes. Common. Leaves pinnately lobed. *H.L. Bell 1704*.
- STREPTANTHELLA LONGIROSTRIS (S. Watson) Rydb. Longbeak streptanthella. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. East-facing slope of Inyo Mountains, disturbed site with mine tailings and desert polish. Common. Fruit reflexed. *H.L. Bell 994*.
- STREPTANTHUS CORDATUS Nutt. var. CORDATUS. Heartleaf twistflower. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland. Bajadas and washes. Occasional. Leaves in basal rosette, round, entire to slightly toothed, corolla zygomorphic. *H.L. Bell 961*.
- THELYPODIUM INTEGRIFOLIUM (Nutt.) Endl. ex Walp. subsp. AFFINE (Greene) Al-Shehbaz. Entire leafed thelypodium. Biennial. *Coleogyne ramosissima* Shrubland and Riparian Scrub. Southeast-facing slope with seeps outside the canyon to Last Chance Spring. Uncommon. Petals white. *H.L. Bell 1760*.
- THYSANOCARPUS CURVIPES Hook. Fringe pod. Annual. Desert Scrub. Base of cliff on east side of Last Chance Range. Generally common. Basal leaves not pinnately lobed, cauline leaves bases lobed, clasping. *S.J. De Groot 10813*. First collection from the study area.

CACTACEAE

- CYLINDROPUNTIA ECHINOCARPA (Engelm. & J.M. Bigelow) F.M. Kunth. Silver cholla. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas. Common. Flowers yellow-green. *H.L. Bell 1207*.
- ECHINOCACTUS POLYCEPHALUS Engelm. & J.M. Bigelow var. POLYCEPHALUS. Cottontop. Perennial. *Larrea tridentata-Ambrosia dumosa*

Shrubland. Bajadas and washes. Common. Forms large dense mounds appearing pink from robust spines. *H.L. Bell* 989. Numerous individuals observed with fruits, buds observed 9 June 2019, one plant seen in late flower 25 July 2020 by SJD, flowers small, yellow.

ECHINOCEREUS ENGELMANNII (Parr. ex Engelm.) Lem. Engelmann's hedgehog cactus. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Bajadas and slopes. Common. Forms open clumps, flowers magenta. *H.L. Bell* 1298.

ECHINOCEREUS MOJAVENSIS (Engelm. & J.M. Bigelow) Rümpler. Mojave kingcup cactus. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Bajadas, rocky hillsides. Common. Forms dense clumps, flowers orange to red. *H.L. Bell* 1360.

MAMMILLARIA TETRANCISTRA Engelm. Common fishhook cactus. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas. Occasional in Inyo County. Plant < 25 cm, central spine hooked, seeds with thick, corky aril. *H.L. Bell* 1078.

OPUNTIA BASILARIS Engelm. & J.M. Bigelow var. *BASILARIS*. Beaver-tail. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas. Common. Areoles with many glochids, no spines, flowers magenta. *H.L. Bell* 987.

OPUNTIA POLYACANTHA Haw. var. *ERINACEA* (Engelm. & J.M. Bigelow) B.D. Parfitt. Grizzlybear pricklypear. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Shallow wash at north end of Last Chance Range. Generally common, infrequent in study area. Spines, slender (hair-like), white, dense, flowers yellow to pink. *S.J. De Groot* 11331.

§ *SCLEROCACTUS JOHNSONII* (Parr. ex Engelm.) N.P. Taylor. Johnson's beehive cactus. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas. CRPR status 2B.2. Spines straight. *H.L. Bell* 1206.

§ *SCLEROCACTUS POLYANCISTRUS* (Engelm. & J.M. Bigelow) Britton & Rose. Redspined fishhook cactus. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland, Calcareous Rock Outcrops. Bajadas, rocky outcrops. Occasional. CRPR status 4.2. Spines red-brown, hooked. *H.L. Bell* 740.

CAMPANULACEAE

NEMAELADUS EASTWOODIAE Morin & T.J. Ayers. Eastwood's threadplant. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes on eastern foothills of Inyo Mountains. This species was described in 2020. Stem silver gray, flower not inverted, flowers 1–1.6 mm, 3 abaxial lobes spreading, adaxial lobes spreading and folded back. *H.L. Bell* 788.

NEMAELADUS INYOENSIS Morin & T.J. Ayers. Badger Flat threadplant. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland. Rocky hillside near Last Chance Spring. Uncommon in Inyo County but frequent at this site. Pedicels straight except for upward curve near the corolla, abaxial lobes with maroon line. *S.J. De Groot* 11213.

NEMAELADUS ORIENTALIS (McVaugh) Morin. Eastern glandular threadplant. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common but not conspicuous, may be locally abundant. Three corolla lobes erect and acute, white with maroon tips. *H.L. Bell* 1562.

NEMAELADUS SIGMOIDEUS G.T. Robbins. Small-flowered threadplant. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Gravelly washes. Infrequent in Inyo County but locally abundant along the foothills of the Inyo Mountains. Flowers not inverted, tubular, may have lavender shading. *H.L. Bell* 1881.

CAPRIFOLIACEAE

SYMPHORICARPOS LONGIFLORUS A. Gray. Fragrant snowberry. Shrub. *Pinus monophylla* Woodland. Narrow canyon leading to Last Chance Spring. Common. Corolla salverform. *H.L. Bell* 1513.

CARYOPHYLLACEAE

EREMOGONE KINGII (S. Watson) Ikonn. var. *GLABRESCENS* (S. Watson) Dorn. King's sandwort. Perennial. *Juniperus osteosperma* Woodland. Last Chance Range: Summit of Last Chance Mountain. Common. Stem 1–20(30) cm, leaves 0.3–2 cm. [Syn. = *Arenaria kingii* (S. Watson) M.E. Jones var. *glabrescens* (S. Watson) Maguire]. *D.A. York* 2608 !, 15 May 2001 (DEVA). Last collected from the study area in 1955.

EREMOGONE MACRADENIA (S. Watson) Ikonn. var. *MACRADENIA*. Mojave sandwort. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* woodland, Calcareous Rock Outcrops. Bajadas and washes. Common. Stem 20–40 cm, leaves 2–6 cm, cauline leaves ascending. [Syn. = *Arenaria macradenia* S. Watson var. *parishiorum* B.L. Rob.] *H.L. Bell* 726.

SCOPULOPHILA RIXFORDII (Brandege) Munz & I.M. Johnston. Rixford rockwort. Perennial *Larrea tridentata-Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Bajadas and washes. Occasional in Inyo County, relatively common in the study area. Dense woody base persistent. *H.L. Bell* 1264.

CLEOMACEAE

CARSONIA SPARSIFOLIA (S. Watson) Greene. Naked cleome. Perennial. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Dunes. Occasional in Inyo County, locally abundant at Eureka Dunes. Inflorescence open, few-flowered. *H.L. Bell* 687.

PERITOMA LUTEA (Hook.) Raf. Yellow spiderflower. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland. Sandy saddle above Last Chance Canyon. Common in northern Inyo County. Inflorescence dense. *S.J. De Groot* 11328.

CONVOLVULACEAE

CRESSA TRUXILLENSIS Kunth. Alkali weed. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Uncommon in Inyo County. Plant tufted, not twining. *H.L. Bell* 1511.

CUSCUTA DENTICULATA Engelm. Small toothed dodder. Vining holoparasite. *Larrea tridentata-Ambrosia dumosa* Shrubland. Several occurrences around the Eureka Valley, growing on *Amsinckia*, *Chaenactis*, *Cryptantha*, *Larrea*, and *Malacothrix*. Occasional in Inyo County. Corolla margins finely dentate, stems twining, orange (achlorophyllous). *H.L. Bell* 1157.

CROSSOSOMATAACEAE

GLOSSOPETALON SPINESCENS A. Gray var. *ARIDUM* M.E. Jones. Nevada greasewood. Shrub. Calcareous Rock Outcrops. East side of Last Chance Range at the base of brown limestone cliffs. Uncommon. Leaf tip rounded, stipules of minute bristles, flowers axillary. *S.J. De Groot* 10815.

EHRETIACEAE

TIQUILIA NUTTALLII (Hook.) A.T. Richardson. Annual tiquilia. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Dune margins. Common in Inyo County but only one occurrence observed in study area. Leaves with 2–3 pairs of shallowly sunken veins. *H.L. Bell* 1614.

TIQUILIA PLICATA (Torr.) A.T. Richardson. Fan leafed tiquilia. Matting perennial from rhizome. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance and *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy areas. Uncommon in Inyo County, but locally abundant at the Eureka Dunes. Leaves with 4–7 pairs of deeply sunken veins. *H.L. Bell* 1613.

EUPHORBIACEAE

EUPHORBIA MICROMERA Boiss. Sonoran sandmat. Prostrate annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Washes. Occasional in northern

- Inyo County. Involucre bell shaped, gland appendages absent. [Syn. = *Chamaesyce micromera* (Boiss.) Wootton & Standl.] *H.L. Bell* 791.
- EUPHORBIA OCELLATA Durand & Hilg. subsp. ARENICOLA (Parish) Oudejans. Dune spurge. Prostrate annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Washes. Uncommon. Leaves to 15 mm, lanceolate to ovate. [Syn. = *Chamaesyce ocellata* (Durand & Hilg.) Millsp. subsp. *arenicola* (Parish) Thorne]. *H.L. Bell* 741.
- EUPHORBIA SETILOBA Engelm. Yuma sandmat. Prostrate annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Washes. Uncommon in northern Inyo County. Involucre urn shaped, plant hairy, gland appendages lobed. [Syn. = *Chamaesyce setiloba* (Engelm.) Parish]. *H.L. Bell* 831. First collection from the study area, range extension to the northeast.

FABACEAE

- ◆ ASTRAGALUS CALYCOSUS Torr. ex S. Watson var. CALYCOSUS. Torrey's milkvetch. Perennial. "Last Chance Mountains, 2 miles west of Last Chance Spring." *J.C. Roos* 6444 !, 19 June 1955 (RSA). Tufted, stemless perennial.
- ASTRAGALUS CASEI A. Gray. Case's milkvetch. Perennial. *Pinus monophylla-Yucca brevifolia* Woodland. Hillsides and washes in north end of Last Chance Range. Uncommon, but can be locally frequent. Stems erect, wiry. *S.J. De Groot* 11043.
- ASTRAGALUS CURVICARPUS (A. Heller) Macbr. var. CURVICARPUS. Sickie milkvetch. Perennial. *Pinus monophylla-Yucca brevifolia* Woodland. North end of Last Chance Range. Uncommon. Fruit pendent, strongly recurved. *H.L. Bell* 1675. First collection in study area, range extension to the south.
- ASTRAGALUS DIDYMOCARPUS Hook. & Arn. var. DISPERMUS (A. Gray) Jeps. Notch leafed locoweed. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajada on east side of Last Chance Range. Uncommon in Inyo County, but can be locally frequent. Calyx hairs mostly white, stem mostly prostrate. *S.J. De Groot* 10891.
- § ASTRAGALUS INYOENSIS E. Sheld. ex Coville. Inyo milkvetch. Perennial. CRPR status 4.2. "0.5 miles west of Willow Spring. Last Chance Mts." *J.C. Roos* 6371 !, 15 May 1955 (RSA); Last Chance Range: southeast end of range, along Willow Creek Rd, at western base of Sylvania Mountains, about 3 mi west of NV border. *J.M. André* 29390, 21 Apr 2014 (GMDRC).
- ASTRAGALUS LAYNEAE Greene. Layne milkvetch. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland with *Ephedra* spp., *Coleogyne ramosissima* Shrublands. Sandy washes. Common. Corolla two-colored, mostly white with purple tips. *H.L. Bell* 876.
- § ASTRAGALUS LENTIGINOSUS Douglas var. MICANS Barneby. Shining milkvetch. Perennial. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance bordering on *Larrea tridentata* Shrubland. Sandy flats. CRPR status 1B.2. Plant with dense silky hairs. *H.L. Bell* 674.
- § ASTRAGALUS LENTIGINOSUS Douglas var. SESQUIMETRALIS (Rydb.) Barneby. Sodaville milkvetch. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. CRPR status 1B.1. Growth form prostrate. *H.L. Bell* 1501.
- ASTRAGALUS MOHAVENSIS S. Watson var. MOHAVENSIS. Mojave milkvetch. Short-lived perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Highly disturbed roadside. Uncommon. Fruit generally straight and compressed. *H.L. Bell* 904.
- ASTRAGALUS NEWBERRYI A. Gray. var. NEWBERRYI. Newberry's milkvetch. Perennial. Sparse *Pinus monophylla* Woodland. North-facing road cut immediately east of the mouth of Last Chance Canyon. Uncommon. Calyx with mainly white hairs, corolla bright pink. *H.L. Bell* 1829. First collection in study area since 1978.
- ASTRAGALUS PANAMINTENSIS E. Sheld. Panamint milkvetch. Mat-forming perennial. Calcareous Rock Outcrops. Steep rocky wash in talus hillside. Only known in Inyo County in California, locally rare. Stems wiry, incurved, resembles a messy nest. *S.J. De Groot* 10889.
- § ASTRAGALUS PLATYTROPIS A. Gray. Broad keeled milkvetch. Cespitose perennial. Sparse *Pinus monophylla* Woodland. Last Chance Range, 180 m east of Last Chance Mountain. CRPR status 2B.2. Plants cespitose, densely hairy, fruits bladdery. *D. York* 2607 !, 30 May 2001 (DEVA).
- ASTRAGALUS PURSHII Douglas var. TINCTUS M.E. Jones. Woollypod milkvetch. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Disturbed area near Crater sulfur mine. Common. Fruit ascending, densely hairy. *H.L. Bell* 1591.
- § ASTRAGALUS SABULONUM A. Gray. Gravel milkvetch. Annual. *Pinus monophylla* Woodland. East side of Last Chance Range approaching canyon to Last Chance Spring. CRPR status 2B.2. Hairs ascending and spreading. *H.L. Bell* 1390.
- § ASTRAGALUS SERENOI (Kuntze) E. Sheld. var. SHOCKLEYI (M.E. Jones) Barneby. Naked milkvetch. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. North end of Last Chance Range, along road to Willow Spring. CRPR status 2B.2. Fruit glabrous, not speckled. *S.J. De Groot* 11084.
- DALEA MOLLIS Benth. Hairy prairie clover. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy washes. Occasional in Inyo County. Leaflet margins entire, corolla equal or larger than calyx. *H.L. Bell* 1144.
- DALEA MOLLISSIMA (Rydb.) Munz. Soft prairie clover. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy washes. Common. Leaflet margins lobed to wavy, corolla smaller than calyx. *H.L. Bell* 818.
- GLYCYRRHIZA LEPIDOTA Pursh. Wild licorice. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Common in northern Inyo County. Fruit with hooked prickles. *H.L. Bell* 1503.
- LUPINUS ARGENTEUS Pursh. Silvery lupine. Perennial. *Pinus monophylla, Yucca brevifolia, Juniperus osteosperma* Woodland. Last Chance Range: northeast end of range, along Willow Creek Rd., at western base of Sylvania Mountains, about 3 mi west of NV border. Common in northeastern California. Calyx more or less spherical. *J.M. André* 29399 !, 21 Apr 2014 (RSA).
- ◆ LUPINUS BREVICAULIS S. Watson. Sand lupine. Annual. "Last Chance Mountains. One mile south of Willow Springs." *J.C. Roos* 6434 !, 19 June 1955 (RSA). Inflorescence 1–2.5 cm.
- LUPINUS FLAVOCULATUS A. Heller. Yellow eyes. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Northern end of Last Chance Range. Common. Fruit ovate, seeds wrinkled. *H.L. Bell* 1676.
- § LUPINUS POLYPHYLLUS Lindl. var. HUMICOLA Null. Holmgren's lupine. Perennial. *Pinus monophylla, Artemisia tridentata, Ephedra viridis* Woodland. Northern end of Last Chance Range near Nevada border. CRPR status 2B.3. Plant 4–7 dm, petals violet. [Syn. = *Lupinus holmgrenianus* C.P. Sm.] *H.L. Bell* 1644.
- LUPINUS SHOCKLEYI S. Watson. Desert lupine. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Sandy dune margins. Occasional in Inyo County. Leaflets canescent. *H.L. Bell* 679.
- * MEDICAGO LUPULINA L. Black medick. Annual. *Pinus monophylla* Woodland. Disturbed area around Last Chance Spring. Uncommon in Inyo County. Fruit black, one-seeded. *H.L. Bell* 1515.
- PROSOPIS GLANDULOSA Torr. var. TORREYANA (L.D. Benson) M.C. Johnst. Honey mesquite. Shrub or tree < 7 m. *Coleogyne ramosissima* Shrublands. Seep southeast of Last Chance Spring. East side of Last Chance Range. Generally common, limited appropriate habitat in the study area. Flower radial, fruit not coiled. *S.J. De Groot* 9978. Single non-flowering individual observed at Sand Spring, but died in 2018.
- § PSOROTHAMNUS ARBORESCENS (A. Gray) Barneby var. ARBORESCENS. Mojave indigo-bush. Shrub. *Pinus monophylla-Yucca brevifolia* Woodland. Northern end of Last Chance Range. CRPR status 4.3 (locally abundant in northern Eureka Valley and north end of Death Valley). Calyx densely hairy. *H.L. Bell* 1685.
- PSOROTHAMNUS ARBORESCENS (A. Gray) Barneby var. MINUTIFOLIUS (Parish) Barneby. Mojave indigo-bush. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Calyx hairless or sparse. *H.L. Bell* 1345.
- PSOROTHAMNUS POLYDENIUS (Torr.) Rydb. Nevada dalea. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland and *Dicoria canescens-Abronia*

turbinata Sparsely Vegetated Alliance. Bajadas and washes, sandy areas, dune margins. Common. Twigs with numerous, distinctive glands. *H.L. Bell 1156*.

GENTIANACEAE

- ◆ § *FRASERA ALBOMARGINATA* S. Watson var. *ALBOMARGINATA*. Desert green-gentian. Perennial. CRPR status 2B.2. "Last Chance Mountains, 2.5 miles south of Willow Spring." *J.C. Roos 6437* !, 19 June 1955 (RSA); "Last Chance Mountains, Death Valley drainage, ridge west of Last Chance Springs." *M. DeDecker 4322* !, 21 June 1977 (RSA). Inflorescence branches, calyx lobes glabrous.

GERANIACEAE

- * *ERODIUM CICUTARIUM* (L.) L'Hér. Redstem filaree. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Washes, disturbed roadsides. Common, weedy. Leaflets lobed to deeply dissected. *H.L. Bell 1165*.

GROSSULARIACEAE

- ◆ *RIBES CEREUM* Douglas. Wax currant. Shrub. "Last Chance Mountains, White Top Peak, 2 mi. west of Last Chance Spring." *J.C. Roos 6450* !, 19 June 1955. (RSA). Hypanthium > 2 × longer than wide, without nodal spines.
- RIBES VELUTINUM* Greene. Desert gooseberry. Shrub. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Hillside at head of Last Chance Canyon. Common in Inyo County, uncommon in study area. Nodal spines present. *S.J. De Groot 11145*.

HELIOTROPIACEAE

- HELIOTROPIMUM CURASSAVICUM* L. var. *OCULATUM* (A. Heller) I.M. Johnston. ex Tidestr. Alkali heliotrope. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley, growing in a sandy area away from the seep. Uncommon in Inyo County. Plant fleshy, corolla white. *H.L. Bell 1506*.

HYDRANGEACEAE

- § *FENDLERELLA UTAHENSIS* (S. Watson) A. Heller. Yerba desierto. Shrub. *Pinus monophylla*-*Juniperus osteosperma* Woodland, Calcareous Rock Outcrops. Rocky hillsides. CRPR status 4.3, common in Inyo County. Bark white, peeling in thin strips, flowers < 8 mm wide. *S.J. De Groot 11202*.

HYDROPHYLLACEAE

- EMMENANTHE PENDULIFLORA* Benth. var. *PENDULIFLORA*. Whispering bells. Annual. *Pinus monophylla* Woodland and *Larrea tridentata*-*Ambrosia dumosa* scrub. Canyon to Last Chance Spring. Uncommon in eastern Inyo County. Corolla yellow to cream, pendent. *H.L. Bell 1368*.
- EUCRYPTA MICRANTHA* (Torr.) A. Heller. Dainty desert hideseed. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Rocky east-facing slope of Inyo Mountains with desert varnish. Common. Calyx lobes erect. *H.L. Bell 1018*.
- HESPEROCHIRON PUMILUS* (Griseb.) Porter. Dwarf hesperochiron. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Leaves glabrous abaxially. Rare in Inyo County, common in the Sierra Nevada. *H.L. Bell 1511a*. One previous collection from the study area (1987).
- PHACELIA CALTHIFOLIA* Brand. Caltha-leafed phacelia. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Plant with few, brittle stems. *H.L. Bell 1712*.
- § *PHACELIA COERULEA* Greene. cf. Skyblue phacelia. Annual. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Hillside in northern Last Chance Range. CRPR status 2B.3, locally rare. Corolla 3–5 mm, bell

shaped, seeds with 2 longitudinal grooves. *S.J. De Groot 11290*. First collection from the study area, range extension to the north.

- PHACELIA CRENULATA* Torr. ex S. Watson var. *AMBIGUA* (M.E. Jones) J.F. Macbr. Cleft-leaf wild heliotrope. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Fruit spheric, seeds with 2 longitudinal grooves. *H.L. Bell 638*.
- PHACELIA CRENULATA* Torr. ex S. Watson var. *CRENULATA*. Cleftleaf wild heliotrope. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Fruit ovoid, seeds with 2 longitudinal grooves. *H.L. Bell 1004*.
- PHACELIA CRYPTANTHA* Greene. Small flowered phacelia. Annual. *Yucca brevifolia* Woodland. Rocky wash on east side of Last Chance Range. Occasional in Inyo County, uncommon in study area. Stamens, style branches included. *S.J. De Groot 10871*.
- PHACELIA CURVIPES* Torr. ex S. Watson. Washoe phacelia. Annual. Common. *Pinus monophylla*-*Yucca brevifolia* Woodland. Wash running into Cucomungo Canyon. Occasional, may be locally frequent. Corolla with white center and purple at tips. *S.J. De Groot 11055*.
- PHACELIA DISTANS* Benth. Distant phacelia. Annual. *Pinus monophylla*, *Artemisia tridentata*, *Ephedra viridis* Woodland. Northern end of Last Chance Range, shallow wash. Common. Corolla may be persistent in fruit, fruit spheric, seeds not grooved, stamens exserted, pedicels ≥ 1 mm in fruit. *H.L. Bell 1631*.
- PHACELIA FREMONTII* Torr. Fremont's phacelia. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland and *Pinus monophylla*-*Yucca brevifolia* Woodland. Bajadas and washes. Common. Corolla funnel shaped, throat yellow, lobes pink to blue. *H.L. Bell 890* (RSA).
- § *PHACELIA MOHAVENSIS* A. Gray. Mojave phacelia. Annual. Half way up east side of Last Chance Range on Big Pine to Death Valley Road. CRPR status 4.3. *B. Erter 10048a*, 27 May 1991 (UC).
- § *PHACELIA PEIRSONIANA* J.T. Howell. Peirson's phacelia. Annual. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Ridge at north end of Last Chance Range. CRPR status 4.3, uncommon in study area. Leaf blade more or less round, calyx lobes > 1 mm wide in fruit. *S.J. De Groot 11298*.
- PHACELIA PERITYLOIDES* Coville var. *PERITYLOIDES*. Panamint phacelia. Perennial. *Pinus monophylla* Woodland, Calcareous Rock Outcrops. Narrow limestone canyons, southwest of Little Sand Spring. Occasional. At least 8 seeds per fruit. *S.J. De Groot 10861*.
- PHACELIA ROTUNDIFOLIA* Torr. ex S. Watson. Round leaf phacelia. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Bajadas and washes. Common. Plant with brownish cast, leaves round, shallowly lobed; calyx lobes < 1 mm wide in fruit. *H.L. Bell 1186*.
- PHACELIA TANACETIFOLIA* Benth. Tansy leaf phacelia. Annual. *Yucca brevifolia* Woodland. Bank along wash, through Last Chance Canyon. Uncommon in Inyo County. Plant stiffly erect, fruit ovoid to elliptic, fruit ovoid to elliptic, pedicels < 1 mm in fruit. *S.J. De Groot 11166*. First collection from the study area, range extension to the northeast.
- PHACELIA VALLIS-MORTAE* J. Voss. Death Valley phacelia. Annual. *Coleogyne ramosissima* Shrublands and *Pinus monophylla*-*Juniperus osteosperma* Woodland. Northeast end of Last Chance Range. Common, but infrequent in study area. Plant densely hairy, dark gray-green, fruit puberulent. *H.L. Bell 1854*.
- PHOLISTOMA MEMBRANACEUM* (Benth.) Constance. White fiestaflower. Fleshy annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Rocky east-facing slope of Inyo Mountains with desert varnish. Uncommon in northern Inyo County. Mature fruit not enclosed by calyx, stem glaucous. *H.L. Bell 1008*. First collection from the study area, range extension to the north.
- TRICARDIA WATSONII* S. Watson. Three hearts. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, *Pinus monophylla*-*Juniperus osteosperma* Woodland. Bajadas and washes. Common. Outer three calyx lobes cordate. *H.L. Bell 708*.

JUGLANDACEAE

- JUGLANS HINDSII* Jeps. ex R.E. Sm. Northern California black walnut. Tree. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Single specimen

growing above Last Chance Spring in highly disturbed area, may have been planted. Tufts of hairs along veins on the abaxial leaf surface. *H.L. Bell 1732.*

LAMIACEAE

- SALVIA COLUMBARIAE Benth. Chia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Canyon mouths. Common. Annual habit, with short hairs, not woolly. *H.L. Bell 1164.*
- SALVIA DORRII (Kellogg) Abrams var. PILOSA (A. Gray) Strachan & Reveal. Desert sage. Shrub. Desert scrub. Narrow limestone canyon in eastern Last Chance Range. Common, but infrequent in study area. Calyx shaggy hairy. *S.J. De Groot 10865b.*
- § SALVIA FUNEREA M.E. Jones. Death Valley sage. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Narrow limestone canyon in northern Last Chance Range. CRPR status 4.3 (common in eastern Inyo County). Plant densely white woolly, leaf spine tipped. *S.J. De Groot 10862.*
- SCUTELLARIA MEXICANA (Torr.) A.J. Paton. Bladder sage. Shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Lateral branches rigid, tips spine-like, calyx inflated, papery in fruit. *H.L. Bell 1290.*

LOASACEAE

- EUCNIDE URENS (A. Gray) Parry. Desert stingbush. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Rocky canyons and washes. Common. Stinging, barbed hairs. *H.L. Bell 716.*
- MENTZELIA ALBICAULIS (Douglas ex Hook.) Douglas ex Torr. & A. Gray. Whitestem blazingstar. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Fruit narrow and straight (or slightly curved). *H.L. Bell 748.*
- MENTZELIA JONESII (Urb. & Gilg.) H.J. Thoms. & J.E. Roberts. Jones blazingstar. Annual. *Coleogyne ramosissima* Shrublands. Uncommon. Fruit curved or S-shaped. *H.L. Bell 1831.*
- MENTZELIA NITENS Greene. Shining blazingstar. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Seeds with recurved flap over attachment scar. *H.L. Bell 1335.*
- MENTZELIA OBSCURA H.J. Thoms. & J.E. Roberts. Pacific blazingstar. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy dune margins and washes. Occasional. Seeds tan, seed coats cells domed. *H.L. Bell 1146.*
- MENTZELIA OREOPHILA J. Darl. Argus blazingstar. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, Desert Scrub. Bajadas and washes. Occasional. Fruit urn shaped, upper leaves clasping stem. *H.L. Bell 1271.*
- MENTZELIA REFLEXA Coville. Reflexed blazingstar. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common in Inyo County. Fruit cylindric to barrel shaped, sometimes reflexed. *H.L. Bell 1038.*
- PETALONYX NITIDUS S. Watson. Shinyleaf sandpaper plant. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, and Desert Scrub. South-facing rocky hillside. Common in Inyo County. Leaves petioled. *H.L. Bell 1543.*
- PETALONYX THURBERI A. Gray. subsp. THURBERI. Thurber's sandpaper plant. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in Inyo County. Leaves sessile, hairs rough, appressed. *H.L. Bell 1280.*

MALVACEAE

- EREMALCHE EXILIS (A. Gray) Greene. White mallow. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy bajada. Occasional, more common in Southern California. Plant prostrate to decumbent, leaves 3–5 palmately lobed. *S.J. De Groot 10895.* First collection from the study area.

EREMALCHE ROTUNDIFOLIA (A. Gray) Greene. Desert five-spot. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Washes. Common, at northern edge of its range. Plant erect, leaves round with crenate to dentate edges. *H.L. Bell 1471.*

SPHAERALCEA AMBIGUA A. Gray var. AMBIGUA. Apricot mallow. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland and *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas and washes, in Eureka Valley, locally abundant at margins of dunes. Common. Flowers red-orange to apricot, inflorescence an open panicle. *H.L. Bell 672.*

SPHAERALCEA AMBIGUA A. Gray var. ROSACEA (Munz & I.M. Johnst.) Kearney. Parish mallow. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Flowers lavender to pink. *H.L. Bell 1147.*

SPHAERALCEA AMBIGUA A. Gray var. RUGOSA (Kearney) Kearney. Rough leaf apricot mallow. Subshrub. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Leaves markedly wrinkled abaxially, inflorescence raceme-like or a dense panicle. *H.L. Bell 1606.*

MONTIACEAE

- CALYPTRIDIVM MONANDRUM Nutt. Pusypaws. Annual. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Uncommon in eastern Inyo County. Petals generally 3. *H.L. Bell 1647.*
- CLAYTONIA PERFOLIATA Willd. subsp. INTERMONTANA J.M. Mill. & K.L. Chambers. Miner's lettuce. Annual. Desert scrub. East side of Last Chance Range, rocky hillsides and canyons, often on north-facing slopes. Uncommon in Inyo County but may be locally frequent. Basal leaves diamond shaped. *S.J. De Groot 10806.* First collection from the study area.

NAMACEAE

- NAMA DEMISSA A. Gray var. COVILLEI Brand. Purple mat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in northern Inyo County. Plant gray-green, leaves petioled. *H.L. Bell 1428.*
- NAMA DEMISSA A. Gray var. DEMISSA. Purple mat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Plants green, leaves sessile. *H.L. Bell 1192.*

NYCTAGINACEAE

- § ABRONIA NANA S. Watson var. COVILLEI (Heimerl) Munz. Coville's dwarf abronia. Cespitose perennial. *Pinus monophylla* Woodland. North-facing white talus slope, just below the summit of Last Chance Mountain. CRPR status 4.2. Occasional in study area. Plant densely tufted, leaves basal. *S.J. De Groot 9942.*
- ABRONIA TURBINATA S. Watson. Transmontane sand verbena. Annual (occasionally perennial). *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Sandy margins of Eureka Dunes. Occasional in northern Inyo County, locally abundant at dune margins. Fruit wings thick, hollow. *H.L. Bell 1127.*
- ALLIONIA INCARNATA L. Trailing windmills. Annual. *Larrea tridentata-Ambrosia dumosa* Shrublands. Gravelly bajadas. Uncommon. Bracts 3, fused, flowers 3 per involucre. *H.L. Bell 829.*
- ◆ ANULOCAULIS ANNULATUS (Coville) Standl. Valley ringstem. Perennial. "West base Last Chance Mountains northeast of Eureka Valley sand dunes." *J.C. Roos 6350* !, 13 May 1955 (RSA). Fruit glabrous with 10 inconspicuous ribs.
- MIRABILIS ALBIDA (Walter) Heimerl. White four o'clock. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajada on east side of Last Chance Range. Uncommon in Inyo County. Leaf petioled, involucre hairy. *H.L. Bell 1458.*
- ◆ MIRABILIS ALIPES (S. Watson) Pilz. Winged four o'clock. Perennial. "Sylvania Mountains: Eureka Valley drainage, Willow Wash." *M. DeDecker 2668* !, 31 May 1971 (RSA). Perianth ~ 15 mm, bell shaped.

- MIRABILIS LAEVIS (Benth.) Curran var. CRASSIFOLIA (Choisy) Spellenb. Wishbone bush. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas. Uncommon in Inyo County. Flowers pink to dark magenta. *H.L. Bell 1036*. First collection from the study area.
- MIRABILIS LAEVIS (Benth.) Curran var. RETRORSA (A. Heller) Jeps. Desert wishbone bush. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Bajadas. Occasional. Flowers white to pale pink, fruit spherical. *H.L. Bell 1178*.
- MIRABILIS LAEVIS (Benth.) Curran var. VILLOSA (Kellogg) Spellenb. Wishbone bush. Perennial. *Pinus monophylla* Woodland. Last Chance Canyon. Common. Flowers white to pale pink, fruit ovoid. *H.L. Bell 1366*.
- MIRABILIS MULTIFLORA (Torr.) A. Gray var. PUBESCENS S. Watson. Desert four o'clock. Perennial. *Yucca brevifolia* Woodland. Bench along wash through Last Chance Canyon. Uncommon. Fruits more or less smooth, with 10 ribs. *S.J. De Groot 11175*.

OLEACEAE

- ◆ FRAXINUS ANOMALA Torr. ex S. Watson. Single leaf ash. Shrub to small tree. "Last Chance Range, Eureka Valley drainage: East of north end of Eureka Sand Dunes." *M. DeDecker 4241* !, 10 May 1977 (RSA). Lacks petals.
- MENODORA SPINESCENS A. Gray var. SPINESCENS. Spiny desert olive. Shrub. Mixed habitat with *Larrea tridentata*, *Coleogyne ramosissima*. East side of Last Chance Range along road to Last Chance Spring. Occasional, but can be locally frequent. Corolla tube shorter than 5 mm. *H.L. Bell 1611*.

ONAGRACEAE

- CAMISSONIA KERNENSIS (Munz) P.H. Raven subsp. GILMANII (Munz) P.H. Raven. Kern evening-primrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in northern Inyo County. Growth open, leaves not clustered at the base. *H.L. Bell 973*. First collection from the study area, range extension to the north.
- CAMISSONIA PARVULA (Nutt. ex Torr. & A. Gray) P.H. Raven. Lewis River suncup. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in eastern Inyo County. Plant more or less glabrous. *H.L. Bell 1173*.
- CAMISSONIA PUSILLA P.H. Raven. Little wiry suncup. Annual. *Pinus monophylla* Woodland. Narrow canyon leading to Last Chance Spring. Occasional. Sepals 1.2–2 mm, all spreading. *H.L. Bell 1355*.
- CAMISSONIOPSIS PALLIDA (Abrams) W.L. Wagner & Hoch subsp. PALLIDA. Pale yellow suncup. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Western margin of main Eureka Valley Dune. Uncommon in Inyo County. Plant with basal rosette, leaves strigose. *H.L. Bell 677*. First collection from the study area, range extension to the northeast.
- CHYLISMIA BREVIPES (A. Gray) Small subsp. BREVIPES. Yellow cups. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Plant hairs spreading. *H.L. Bell 756*.
- CHYLISMIA BREVIPES (A. Gray) Small subsp. PALLIDULA (Munz) W.L. Wagner & Hoch. Pallid suncup. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Plant hairs strigose. *H.L. Bell 1351*.
- CHYLISMIA CARDIOPHYLLA (Torr.) Small subsp. ROBUSTA (P.H. Raven) W.L. Wagner & Hoch. Heartleaf suncup. Annual or perennial herb. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy margin of Marble Dune. Occasional. Inflorescence dense, lacks basal rosette. *H.L. Bell 1145*.
- CHYLISMIA CLAVIFORMIS (Torr. & Frém.) A. Heller subsp. FUNEREA (P.H. Raven) W.L. Wagner & Hoch. Browneyed primrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Lateral leaflets lacking, sepal tips free in bud, corolla white. *H.L. Bell 625*.
- CHYLISMIA CLAVIFORMIS (Torr. & Frém.) A. Heller subsp. INTEGRIOR (P.H. Raven) W.L. Wagner. Clavate fruit primrose. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland. Bank along wash through Last Chance Canyon. Common. Sepal tips not free in bud, corolla white. *S.J. De Groot 11165*.
- CHYLISMIA CLAVIFORMIS (Torr. & Frém.) A. Heller subsp. LANCIFOLIA (A. Heller) W.L. Wagner & Hoch. Clavate fruit primrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajada at mouth of Hanging Rock Canyon. Common. Terminal leaflet lanceolate, corolla yellow, plant glabrous or with strigose hairs. *S.J. De Groot 10782*.
- ◆ CHYLISMIA HETEROCHROMA (S. Watson) Small. Shockley's evening primrose. Annual. "Last Chance Mountains, east side, Death Valley Road at Purple Hill." *M. DeDecker 4212*, 5 Oct 1976. (RSA).
- CHYLISMIA MUNZII (P.H. Raven) W.L. Wagner & Hoch. Death Valley suncup. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Northern end of Death Valley. Occasional. Pedicel and fruit reflexed. *H.L. Bell 1497*.
- CHYLISMIA WALKERI A. Nelson subsp. TORTILIS (Jeps.) W.L. Wagner & Hoch. Walker's suncup. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Inflorescence erect, sepals $\leq$ 4 mm. *H.L. Bell 1252*.
- CHYLISMIELLA PTEROSPERMA (S. Watson) W.L. Wagner & Hoch. Wind fruit suncup. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland. Desert pavement along wash running into Cucomungo Canyon, and rocky hillside on east side of Last Chance Range. Occasional. Fruit 4 chambered, seeds winged, with concave and convex sides. *S.J. De Groot 11058*.
- EPILOBIUM CILIATUM Raf. subsp. CILIATUM. Fringed willowherb. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Last Chance Range: Last Chance Spring. Common. Petals 2–6 mm, white to pink. *D.A. York 2396* ! 12 June 2000 (DEVA).
- EREMOTHERA BOOTHII (Douglas) W.L. Wagner & Hoch subsp. ALYSOIDES (Hook. & Arn.) W.L. Wagner & Hoch. Pine Creek evening primrose. Annual. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Occasional. Plants strigose, fruit wider at base. *S.J. De Groot 11066*.
- EREMOTHERA BOOTHII (Douglas) W.L. Wagner & Hoch subsp. DESERTORUM (Munz) W.L. Wagner & Hoch. Booth's evening primrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Rocky eastern slope of Inyo Mountains, with desert varnish. Common. Rosette well developed, inflorescence nodding, fruit wider at base than tip, fruit curved downward. *H.L. Bell 1024*.
- § EREMOTHERA BOOTHII (Douglas) W.L. Wagner & Hoch subsp. INTERMEDIA (Munz) W.L. Wagner & Hoch. Booth's hairy evening primrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland and *Pinus monophylla-Yucca brevifolia* Woodland. Northern Death Valley east of Last Chance Range. CRPR status 2B.3. Cauline leaves lanceolate, plant hairs spreading, fruit wider at base. *H.L. Bell 1493*.
- EREMOTHERA CHAMAENERIOIDES (A. Gray) W.L. Wagner & Hoch. Long capsule suncup. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Fruit same width throughout, sepals $\leq$ 2.5 mm. *H.L. Bell 1051*.
- EREMOTHERA REFRACTA (S. Watson) W.L. Wagner & Hoch. Narrow leaf suncup. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Shallow braided washes with desert pavement. Common. Stigma exceeds anthers, sepals $\geq$ 4 mm, fruit same width throughout. *H.L. Bell 1469*.
- ◆ GAYOPHYTUM RAMOSISSIMUM Torr. & A. Gray. Pinyon groundsmoke. Annual. "Last Chance Mountains 2 miles NE of Willow Spring." *J.C. Roos 6463* !, 21 June 1955 (RSA). Pedicel generally longer than fruit.
- § OENOTHERA CESPITOSA Nutt. subsp. CRINATA (Rydb.) Munz. Cespitose evening primrose. Perennial. *Pinus monophylla* Woodland, *Atriplex confertifolia* Shrubland. Rocky alluvial fan in Last Chance Range near Crater Mine. CRPR status 4.2, uncommon in California. Fruit S-shaped, tubercled. *S.J. De Groot 11085*.
- OENOTHERA CALIFORNICA (S. Watson) S. Watson subsp. AVITA W.M. Klein. California evening primrose. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Sandy depression at saddle at the north end of Last Chance Canyon. Common in northern Inyo County. Cauline leaves pinnately lobed, fruits not tubercled, not spreading from roots. *S.J. De Groot 11325*.
- § OENOTHERA CALIFORNICA (S. Watson) S. Watson subsp. EUREKENSIS (Munz & J.C. Roos) W.M. Klein. Eureka Dunes evening primrose. Short-

lived perennial. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Dune margins. CRPR status 1B.2 (USFWS delisted on 29 Mar 2018). White flowered, birdcage growth habit, spreads from lateral roots. *H.L. Bell 843*. Seed collections were made under USFWS permit TE-009018-4.2 and are deposited at the California Botanic Garden seed bank.

OENOTHERA PRIMIVERIS A. Gray. Desert evening primrose. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, and other habitats. Sandy margins of dunes and rocky washes. Uncommon in Inyo County. Yellow flowers, fruits embedded in main stem. [Syn. = *Oenothera primiveris* A. Gray subsp. *bufonis* (M.E. Jones) Munz]. *H.L. Bell 675*. Seed collections were made under USFWS permit TE-009018-4.2 and are deposited at the California Botanic Garden seed bank.

OROBANCHACEAE

APHYLLON COOPERI A. Gray. Desert broomrape. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Sandy margins at north end of main Eureka Dune. Uncommon. Plant dark purple, parasitic on Asteraceae (*Ambrosia dumosa*). [Syn. = *Orobancha cooperi* (A. Gray) A. Heller]. *H.L. Bell 693*. First collection from the study area, range extension to the north.

APHYLLON FASCICULATUM (Nutt.) Torr. & A. Gray. Clustered broomrape. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Northeast end of Last Chance Range, north-facing hillside. Occasional. Corolla pink or yellow. [Syn. = *Orobancha fasciculata* Nutt.]. *S.J. De Groot 11142*.

CASTILLEJA APPLGATEI Fernald subsp. MARTINII (Abrams) T.I. Chuang & Heckard. Martin's paintbrush. Perennial. *Pinus monophylla, Yucca brevifolia, Juniperus osteosperma* Woodland. Last Chance Range: northeast end of range, along Willow Creek Rd. at western base of Sylvania Mountains, about 3 mi west of NV border. Occasional in Inyo County. Calyx lobes obtuse. *J.M. André 29388*, 21 Apr 2014 (RSA).

CASTILLEJA CHROMOSA A. Nelson. Desert paintbrush. Perennial. Common. *Pinus monophylla* Woodland. Narrow canyon on east side of Last Chance Range, above and below Last Chance Spring. Common. Leaves not fleshy, hairs unbranched. *H.L. Bell 1391*.

CASTILLEJA MINOR (A. Gray) A. Gray subsp. MINOR. Lesser Indian paintbrush. Annual. *Coleogyne ramosissima* Shrublands. Southeast-facing slope at the mouth of the canyon to Last Chance Spring. Uncommon. Plant gray-green, shaggy, glandular hairy. *H.L. Bell 1756*.

§ CORDYLANTHUS EREMICUS (Coville & C.V. Morton) Munz subsp. EREMICUS. Desert bird's beak. Annual. *Pinus monophylla* Woodland. Narrow canyon to Last Chance Spring. CRPR status 4.3, common in southern Inyo County. Plant canescent, outer bracts scabrous, tips maroon. *H.L. Bell 1739*. First collection from study area.

CORDYLANTHUS KINGII S. Watson subsp. HELLERI (Ferris) Chuang & Heckard. Heller's bird-beak. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland with *Artemisia* spp., Calcareous Rock Outcrops. Gray limestone talus slope in northern Last Chance Range. Common in northern Inyo County, but infrequent in study area. Plant glandular, sticky, inflorescence a spike. *S.J. De Groot 11265*.

PAPAVERACEAE

ARGEMONE MUNITA Durand & Hilg. Chicalote. Perennial. Desert scrub. Wash through Last Chance Canyon east of the north end of Last Chance Range. Common. Leaves equally prickly on both sides. *S.J. De Groot 11179*.

ESCHSCHOLZIA GLYPTOSPERMA Greene. Desert poppy. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Northern end of Death Valley, bajadas. Common (north end of range). Leaves basal, flowers long exserted above, petals > 10 mm. *H.L. Bell 1495*.

ESCHSCHOLZIA MINUTIFLORA S. Watson. Pygmy poppy. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Washes. Common. Leaves blue-gray green, basal and cauline, petals generally 3–6 mm. *H.L. Bell 1346*.

PHRYMACEAE

DIPLACUS BIGELOVII (A. Gray) G.L. Nesom var. CUSPIDATUS (A.L. Grant) G.L. Nesom. Bigelow's monkeyflower. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Distal leaves round and may be sharp pointed to acuminate, corolla magenta. [Syn. = *Mimulus bigelovii* (A. Gray) A. Gray var. *cuspidatus* A.L. Grant]. *H.L. Bell 1232*.

§ DIPLACUS RUPICOLA (Coville & A.L. Grant) G.L. Nesom & N.S. Fraga. Death Valley monkeyflower. Perennial. Limestone outcrops and crevices. CRPR status 4.3, common in Inyo County. Corolla pink to white with large reddish spots at the base of each lobe. [Syn. = *Mimulus rupicola* Coville & A.L. Grant]. *H.L. Bell 1341*.

♦ ERYTHRANTHE CALCICOLA N.S. Fraga & D.A. York. Limestone monkeyflower. Annual. "Last Chance Mountains: East side, west of Last Chance Spring." *M. DeDecker 4688a* !, 24 May 1978 (RSA). The label identifies this specimen as *Mimulus montioides*; however, the name was misapplied and it is a recently described species (Fraga 2012). Corolla yellow or white, leaves lanceolate to ovate.

ERYTHRANTHE GUTTATA (DC.) G.L. Nesom. Yellow monkeyflower. Annual or rhizomatous perennial. Riparian scrub with *Solidago* and *Cirsium*. Seep southeast of Last Chance Spring. Common, occasional in the study area. Flowers generally 5 per stem, yellow. [Syn. = *Mimulus guttatus* DC.]. *S.J. De Groot 11222*.

ERYTHRANTHE RUBELLA (A. Gray) N.S. Fraga. Little red stem monkeyflower. Annual. *Coleogyne ramosissima* Shrublands. Sandy wash southeast of canyon to Last Chance Spring. Occasional. Calyx lobes ciliate, corolla yellow or magenta, leaves linear to elliptic. [Syn. = *Mimulus rubellus* A. Gray]. *H.L. Bell 1404*.

ERYTHRANTHE SUKSDORFII (A. Gray) N.S. Fraga. Miniature monkeyflower. Annual. *Pinus monophylla* Woodland. Narrow canyon leading to Last Chance Spring. Occasional. Corolla lobes 0.3–1 mm, bright yellow, calyx lobes glabrous. [Syn. = *Mimulus suksdorfii* A. Gray]. *H.L. Bell 1356*.

PLANTAGINACEAE

ANTIRRHINUM KINGII S. Watson. Least snapdragon. Annual. *Pinus monophylla* Woodland. Narrow canyon leading to Last Chance Spring. Uncommon. Corolla of opening flowers 5–7 mm, white. *H.L. Bell 1376*.

ANTIRRHINUM MOHAVEA D.J. Keil. Golden desert snapdragon. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Corolla bright yellow. [Syn. = *Mohavea breviflora* Coville]. *H.L. Bell 1044*.

♦ KECKIELLA ROTHROCKII (A. Gray) Straw. subsp. ROTHROCKII. Rothrock's keckiella. Shrub. "Last Chance Mountains 1 mile south of Willow Spring." *J.C. Roos 6494* !, 21 July 1955 (RSA). Leaves canescent.

§ PENSTEMON CALCAREUS Brandegee. Limestone beardtongue. Perennial. Calcareous Rock Outcrops. Gray limestone talus slope on east side of Last Chance Range. CRPR status 1B.3, locally frequent in parts of the study area. Corolla bright pink to rose-purple, herbage hairy, anthers fully dehiscent. *S.J. De Groot 10868*.

PENSTEMON FLORIDUS Brandegee var. FLORIDUS. Panamint beardtongue. Perennial. *Pinus monophylla-Yucca brevifolia* Woodland. North end of Last Chance Range along Willow Spring Road. Common at north end of Inyo County. Corolla abruptly expanded at throat, herbage glabrous, inflorescence glandular-hairy, anthers fully dehiscent. *H.L. Bell 1688*.

PENSTEMON FRUTICIFORMIS Coville var. FRUTICIFORMIS. Death Valley beardtongue. Subshrub. *Pinus monophylla-Juniperus osteosperma* Woodland. Talus hillside at north end of Last Chance Range. Occasional. Calyx lobes widely ovate to round; leaves linear, herbage and inflorescence glabrous, anthers fully dehiscent. *S.J. De Groot 11082*.

♦ PENSTEMON ROSTRIFLORUS Kellogg. Bridges' beardtongue. Subshrub. "Last Chance Mountains 1 mile south of Willow Spring." *J.C. Roos 6493* !, 21 July 1955 (RSA). Corolla red to orange, anthers dehiscent on proximal end.

♦ § PENSTEMON SCAPOIDES D.D. Keck. Pinyon beardtongue. Subshrub. CRPR status 4.3. "Last Chance Mountains: 3.5 miles south of Willow

Spring." *J.C. Roos 6442* !, 19 June 1955 (RSA). Leaves hairy, basal, corolla lavender to blue, anthers dehiscing on proximal end.

- ◆ *PENSTEMON SPECIOSUS* Lindl. Royal penstemon. Perennial. "2 mi NE Willow Spring: Last Chance Mountains." *J.C. Roos 6402*, 17 June 1955 (UC).
- PLANTAGO OVATA* Forssk. var. *FASTIGIATA* (Morris) S.C. Meyers & A. Liston. Desert plantain. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common in southern Inyo Co., but uncommon in study area. Corolla lobes without red-brown midrib. *H.L. Bell 1795*.

POLEMONIACEAE

- ALICIELLA HUTCHINSIFOLIA* (Rydb.) J.M. Porter. Desert pale aliciella. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Corolla glandular, puberulent, leaves 1–2 × pinately divided. *H.L. Bell 608*.
- ALICIELLA LATIFOLIA* (S. Watson) J.M. Porter subsp. *LATIFOLIA*. Broad leaved aliciella. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Leaves ovate, margins dentate. *H.L. Bell 1208*.
- ALICIELLA LEPTOMERIA* (A. Gray) J.M. Porter. Sand aliciella. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance, *Yucca brevifolia* Woodland. Sandy margins of dunes and sandy washes. Common. Corolla lobes truncate-acuminate, leaves lanceolate, toothed. *H.L. Bell 686*.
- ◆ *ALICIELLA LOTTIAE* (A.G. Day) J.M. Porter. Lott's aliciella. Annual. "Eureka Valley, Eureka Valley Sand Dunes, north end." *M. DeDecker 4047* !, 14 May 1976 (RSA). Basal leaves adaxially glabrous, serrate to 1 × pinately divided, triangular corolla lobes.
- ALICIELLA MONOENSIS* J.M. Porter. Mono Lake aliciella. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Corolla glabrous abaxially, basal leaves adaxially glandular. *H.L. Bell 645*.
- ERIASTRUM EREMICUM* (Jeps.) H. Mason subsp. *EREMICUM*. Desert woollystar. Annual. *Pinus monophylla* Woodland, Desert Scrub. South-facing slope above Last Chance Spring. Uncommon in Inyo County. Corolla bilateral, sinuses unequal. *H.L. Bell 1516*.
- ERIASTRUM WILCOXII* (A. Nelson) H. Mason. Wilcox's woollystar. Annual. *Pinus monophylla* Woodland. South-facing slope above Last Chance Spring. Common. Corolla radial, sinuses equal. *H.L. Bell 1517*.
- GILIA ALIQUANTA* A.D. Grant & V.E. Grant subsp. *BREVILOBA* A.D. Grant & V.E. Grant. Western gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional in San Bernardino County. Corolla lobes half of tube plus throat, calyx glabrous. *H.L. Bell 770*. First collection from the study area, range extension to the north.
- GILIA BRECCIARUM* M.E. Jones subsp. *BRECCIARUM*. Nevada gilia. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Northern Last Chance Range, wash running into Cucomungo Canyon. Occasional. Throat yellow with purple veins, cauline leaves clasping, calyx glandular. *S.J. De Groot 11048*.
- GILIA CANA* (M.E. Jones) A. Heller subsp. *SPECIFORMIS* A.D. Grant & V.E. Grant. Desert gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas, washes, and rocky hillsides. Common. Corolla throat conic, generally 2–4 × calyx. *H.L. Bell 1172*.
- GILIA CANA* (M.E. Jones) A. Heller subsp. *TRICEPS* (Brand) A.D. Grant & V.E. Grant. Showy gilia. Annual. Desert Scrub. Last Chance Range: along Death Valley Rd, between summits, 3.4 mi west of eastern summit, approx. 1 mi south of Sulphur Rd. Common in Inyo County. Corolla throat cup shaped, tube generally < 2 × calyx. *J.M. André 29359*, 21 Apr 2014 (GMDRC).
- GILIA CLOKEYI* H. Mason. Clokey's gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. South-facing rocky slope. Occasional in Inyo County. Corolla 4–7 mm, throat yellow or white, basal leaf lobes spreading. *H.L. Bell 1547*.
- GILIA INCONSPICUA* (Sm.) Sweet. Shy gilia. Annual. *Larrea tridentata* Shrubland. Volcanic talus on east side of Last Chance Range. Very uncommon in Inyo County. Corolla lobes 1.6–2 mm, throat yellow, with purple spot or not, calyx glandular. *S.J. De Groot 10834*. First collection from the study area.
- GILIA LATIFLORA* (A. Gray) A. Gray subsp. *LATIFLORA*. Broad flowered gilia. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. Sandy margins of dunes. Uncommon in Inyo County. Pedicels elongated, corolla 15–22 mm, purple to base of lobes, cauline leaves clasping. *H.L. Bell 682*.
- GILIA MALIOR* A.G. Day & V.E. Grant. Great Basin gilia. Annual. *Yucca brevifolia* Woodland. North end of Last Chance Range, along Willow Wash Road. Rare in Inyo County. Branches decumbent, corolla without spots. *H.L. Bell 1694*. First collection from the study area.
- GILIA MODOCENSIS* Eastw. Modoc gilia. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Northern Last Chance Range, wash running into Cucomungo Canyon. Occasional in study area. Basal leaves strap shaped, 1-pinnate lobed, green, cauline leaves clasping, deeply toothed. *S.J. De Groot 11049*.
- GILIA OCHROLEUCA* M.E. Jones subsp. *OCHROLEUCA*. Volcanic gilia. Annual. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance, *Pinus monophylla-Yucca brevifolia* Woodland. Sandy margins of dunes and sandy washes. Common. Corolla 4–6 mm, throat yellow proximally, blue distally, basal leaf lobes ascending. *H.L. Bell 1139*.
- GILIA OPHTHALMOIDES* Brand. Yellow eyed gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland. Bajadas, washes and rocky hillsides and ridges. Uncommon in Inyo County. Calyx lobes acuminate. *H.L. Bell 1058*.
- GILIA SCOPULORUM* M.E. Jones. Rock gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, Desert Scrub. Bajadas and washes. Common. Basal leaves shaggy-glandular-hairy, sparsely tufted-hairy, or glabrous. *H.L. Bell 695*.
- GILIA SINUATA* Benth. Cinder gilia. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland. Steep sandy hillside at north end of Last Chance Canyon. Common. Proximal stem glaucous, glabrous, cauline leaves clasping, few-toothed. *S.J. De Groot 11148*.
- GILIA STELLATA* A. Heller. Star gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas, washes, and rocky hillsides. Common. Basal leaves and stem with white, stellate hairs. *H.L. Bell 1176*.
- GILIA TRANSMONTANA* (H. Mason & A.D. Grant) A.D. & V.E. Grant. Transmontane gilia. Annual. *Pinus monophylla-Juniperus osteosperma* Woodland, Desert Scrub, *Larrea tridentata-Ambrosia dumosa* Shrubland. Limestone outcrops on north and east sides of Last Chance Range, also in washes and on bajadas. Occasional, may be locally frequent. Corolla tube red or maroon streaked, branches spreading to erect. *S.J. De Groot 10824*.
- IPOMOPSIS CONGESTA* (Hook.) V.E. Grant subsp. *MONTANA* (A. Nelson & P.B. Kenn.) V.E. Grant. Ball headed ipomopsis. Perennial. *Pinus monophylla* Woodland. Saddle below the north face of Last Chance Mountain. Occasional. Leaves palmately lobed. *S.J. De Groot 9947*.
- IPOMOPSIS POLYCLADON* (Torr.) V.E. Grant. Many branched ipomopsis. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas, washes, and rocky hillsides. Common. Corolla radial, generally white, leaves pinately lobed. *H.L. Bell 735*.
- LANGLOISIA SETOISSIMA* (Torr. & A. Gray) Greene subsp. *PUNCTATA* (Coville) Timbrook. Lilac sunbonnet. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Coleogyne ramosissima* Shrubland. Bajadas and washes. Common. Corolla radial, white to light blue, dotted with lavender. *H.L. Bell 690*.
- LANGLOISIA SETOISSIMA* (Torr. & A. Gray) Greene subsp. *SETOISSIMA*. Bristly sunbonnet. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Coleogyne ramosissima* Shrubland. Bajadas and washes. Occasional. Corolla radial, lavender to blue, not dotted. *H.L. Bell 886*.
- LINANTHUS BIGELOVII* (A. Gray) Greene subsp. *JOHNSONII* J.M. Porter & R. Patt. Bigelow's linanthus. Annual. *Yucca brevifolia* Woodland. Hillside along Last Chance Canyon. Uncommon. Calyx glabrous, leaf margins sparsely hairy, corolla generally closed during the day, open in the evening, lacking red marks. Plant erect. *S.J. De Groot 11156*.

- LINANTHUS CAMPANULATUS (A. Gray) J.M. Porter & L.A. Johnson. Bell shaped gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes, sandy areas. Uncommon. Corolla yellow with white lobes, two purple marks below lobes. *H.L. Bell* 673.
- LINANTHUS DEMISSUS (A. Gray) Greene. Desert snow. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Coleogyne ramosissima* Shrubland. Bajadas and washes. Common. Plant decumbent, corolla white with red spots below lobes. *H.L. Bell* 1347.
- LINANTHUS FILIFORMIS (A. Gray) J.M. Porter & L.A. Johnson. Yellow gilia. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Coleogyne ramosissima* Shrubland. Bajadas and washes. Common. Leaves thread-like, corolla lobes yellow. *H.L. Bell* 1188.
- LINANTHUS JONESII (A. Gray) Greene. Jones' linanthus. Annual. Desert Scrub. Shallow canyon draining into the Eureka Valley from foothills of Inyo Mountains. Common, but scattered. Calyx with large tack-shaped glands, corolla open in the evening, lacking red marks. *S.J. De Groot* 11004.
- LINANTHUS PUNGENS (Torr.) J.M. Porter & L.A. Johnson. Granite gilia. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas and washes. Common. Corolla funnel shaped, white or light pink. *H.L. Bell* 900.
- LOESELIASTRUM MATTHEWSII (A. Gray) Timbrook. Desert calico. Annual. Alkaline seep with *Salix lasiolepis*. Desert scrub. North end of Last Chance Range near Willow Spring, washes. Uncommon in eastern Inyo County. Calyx $\frac{1}{2}$ to $\frac{3}{4}$ corolla tube, corolla bilateral, orange to pink. *H.L. Bell* 1660.
- LOESELIASTRUM SCHOTTII (Torr.) Timbrook. Schott's calico. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Bajadas and washes. Occasional. Calyx more than $\frac{3}{4}$ of corolla tube, corolla bilateral, white to pale yellow. *H.L. Bell* 1466.
- PHLOX STANSBURYI (Torr.) A. Heller. Cold desert phlox. Perennial to subshrub. *Pinus monophylla-Yucca brevifolia* Woodland. Wash and hillsides at north end of Last Chance Range. Common in northern Inyo County. Calyx not expanding in fruit. *S.J. De Groot* 11041. Subspecies have been distinguished by the degree of woodiness in the lower stems; however, this character is highly variable. Taxonomic changes are anticipated for this species (C. Ferguson, pers. comm.).

POLYGONACEAE

- CENTROSTEGIA THURBERI A. Gray. Red triangles. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Northern Last Chance Range, mouth of Cucomungo Canyon. Common. Involucre three-angled with three awns. *S.J. De Groot* 11061.
- CHORIZANTHE BREVICORNU Torr. var. BREVICORNU. Brittle spineflower. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Involucre ribs distinct, leaf blades ≤ 5 mm wide, tips acute. *H.L. Bell* 1191.
- CHORIZANTHE BREVICORNU Torr. var. SPATHULATA (Rydb.) C.L. Hitchc. Great Basin brittle spineflower. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas and washes. Common in Inyo County. Involucre ribs obscure, leaf blades ≥ 5 mm wide, tips round. *H.L. Bell* 1619.
- CHORIZANTHE RIGIDA (Torr.) Torr. & A. Gray. Devil's spineflower. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Erect, low growing, compact, leaves thorn-like in age. *H.L. Bell* 722.
- CHORIZANTHE WATSONII Torr. & A. Gray. Watson's spineflower. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. Hillside above Willow Spring at the northern end of Last Chance Range. Occasional. Involucre cylindric, abaxial tooth longer and wider than others. *S.J. De Groot* 11070.
- CHORIZANTHE XANTII S. Watson var. XANTII. Xantus' spineflower. Annual. *Pinus monophylla-Yucca brevifolia* Woodland. North end of Last Chance Range, in foothills. Common in southern Sierra Nevada, very uncommon in Inyo County. Involucre thinly hairy, perianth lobes not alike, inner

shorter and narrower. *S.J. De Groot* 11044. First collection from the study area, range extension to the east.

- § DEDECKERA EUREKENSIS Reveal & J.T. Howell. July gold. Shrub. Calcareous Rock Outcrops. Last Chance Range, northeast of Crater along east-facing hillsides and ridges, Dedeckera Canyon, ridge screes north of Sandy Peak. CRPR status 1B.3. Involucres with 2–5 awnless bracts. *S.J. De Groot* 10007.
- ◆ ERIOGONUM BAILEYI S. Watson var. BAILEYI. Bailey's buckwheat. Annual. "Last Chance Mountains, 2 miles NE of Willow Spring." *J.C. Roos* 6535 !, 24 Aug 1955 (RSA). Inflorescence glabrous, involucres sessile.
- ERIOGONUM BRACHYPODUM Torr. & A. Gray. Parry's wild buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas, hillsides, and washes. Common. Reddish glands on inflorescence branches. *H.L. Bell* 1233.
- ERIOGONUM CONTIGUUM (Reveal) Reveal. Reveal's buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Single stem above basal rosette, glandular at lower nodes, perianth lobes lanceolate. *H.L. Bell* 661.
- ERIOGONUM DEFLEXUM Torr. var. BARATUM (Elmer) Reveal. Tall skeleton weed. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma-Yucca brevifolia* Woodland. Bajadas and washes. Occasional. Branches inflated, erect, involucres reflexed and glabrous. *H.L. Bell* 1189.
- ERIOGONUM DEFLEXUM Torr. var. DEFLEXUM. Flat topped skeleton weed. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Distinct, flat-topped growth form, involucres reflexed. *H.L. Bell* 1237.
- ERIOGONUM FASCICULATUM Benth. var. POLIFOLIUM (Benth.) Torr. & A. Gray. Mojave Desert buckwheat. Perennial to shrub. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Yucca brevifolia* Woodland, Calcareous Rock Outcrops. Rocky hillsides and washes. Common. Inflorescence umbel-like, leaves gray hairy on both surfaces. *H.L. Bell* 1182.
- § ERIOGONUM GILMANII S. Stokes. Gilman's buckwheat. Matting perennial. *Yucca brevifolia* Woodland, *Coleogyne ramosissima* Shrublands, Calcareous Rock Outcrops. Rocky slopes and ridges of Last Chance Range. CRPR status 1B.3. Inflorescence branched, flowers 3.5–5 mm. *S.J. De Groot* 10885.
- ERIOGONUM GLANDULOSUM (Nutt.) Benth. Glandular wild buckwheat. Annual. *Pinus monophylla* Woodland. Open south-facing hillside east of Last Chance Spring. Uncommon. Entire plant with glandular hairs visible to naked eye. *H.L. Bell* 1752.
- ERIOGONUM HEERMANNII Durand & Hilg. var. ARGENSE (M.E. Jones) Munz. Heermann's rough buckwheat. Shrub. *Pinus monophylla-Yucca brevifolia* woodland, Calcareous Rock Outcrops. Rocky hillsides. Common and locally frequent. Distinct dense Y branching, branches stout, inflorescence branches round, scabrous. *H.L. Bell* 717.
- ERIOGONUM HEERMANNII Durand & Hilg. var. HUMILIS (S. Stokes) Reveal. Heermann's Great Basin buckwheat. Shrub or subshrub. Desert Scrub. Last Chance Range, slot canyon northeast of Crater. Common and locally frequent. Plants sparsely branched, glabrous. *S.J. De Groot* 10010.
- ERIOGONUM HOFFMANNII S. Stokes var. HOFFMANNII. Hoffmann's buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Leaves large (to 8 cm), abaxially tomentose. *H.L. Bell* 1263.
- ERIOGONUM INFLATUM Torr. & Frém. Desert trumpet. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland, sparse *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas and washes. Common. Distinct growth form with inflated stems, flowers yellow, coarsely white-hairy. *H.L. Bell* 1454.
- ERIOGONUM MACULATUM A. Heller. Spotted wild buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland and other Desert Scrub. Bajadas, hillsides, and washes. Common. Basal and cauline leaves, flowers yellow with red stripe along midvein. *H.L. Bell* 728.
- ERIOGONUM MICROTHECA Nutt. var. SIMPSONII (Benth.) Reveal. Simpson's wild buckwheat. Shrub. *Pinus monophylla-Artemisia tridentata* Woodland. Narrow canyon east of Last Chance Spring. Common. Cauline

- leaves narrow, margins incurled, perianth lobes fan shaped. *H.L. Bell 1742*.
- ERIOGONUM NIDULARIUM Coville. Birdnest wild buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland and other Desert Scrub. Ridge top, slopes. Common. Growth form erect, to 20 cm, branches incurved to form birdcage. *H.L. Bell 1194*.
- ERIOGONUM NUMMULARE M.E. Jones. Money wild buckwheat. Shrub. *Pinus monophylla-Juniperus osteosperma-Yucca brevifolia* Woodland. North end of Last Chance Range, wash running into Cucomungo Canyon. Occasional. Involucre tomentose, in racemes at branch tips, flowers glabrous, white with red bases. *S.J. De Groot 11062*. First collection from the study area since 1955.
- § ERIOGONUM NUTANS Torr. & A. Gray var. NUTANS. Dugway buckwheat. Annual. Sparse *Pinus monophylla-Juniperus osteosperma* Woodland. Calcareous scree at northern end of Last Chance Range. CRPR status 2B.3. Peduncles and involucre glandular. *S.J. De Groot 11273*.
- ERIOGONUM OVALIFOLIUM Nutt. var. PURPUREUM (Nutt.) Durand. Cushion buckwheat. Matting perennial. *Pinus monophylla-Yucca brevifolia* Woodland. North end of Last Chance Range, wash running into Cucomungo Canyon. Common, occasional in study area. Inflorescence head-like, flowers white to rose to purple, perianth lobes not alike. *S.J. De Groot 11063*.
- ERIOGONUM PALMERIANUM Reveal. Palmer's buckwheat. Annual. Desert Scrub, Calcareous Rock Outcrops. Calcareous ridge on north side of Last Chance Range. Occasional in Inyo County. Perianth lobes fan shaped, white to pink or pale yellow, involucre sessile. *S.J. De Groot 11268*.
- ERIOGONUM PANAMINTENSE C.V. Morton. Panamint Mountain buckwheat. Perennial. Sparse *Pinus monophylla* Woodland. North-facing road cut immediately east of the mouth of the canyon to Last Chance Spring. Common. Basal and cauline leaves, involucre in racemes at branch tips, plant base not woody. *H.L. Bell 1775*.
- ERIOGONUM PUSILLUM Torr. & A. Gray. Yellow turbans. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Pinus monophylla-Juniperus osteosperma* Woodland. Bajadas, canyons, and washes. Common. Peduncles erect, slender, involucre glandular-hairy. *H.L. Bell 884*.
- ERIOGONUM RENIFORME Torr. & Frém. Kidney leaf buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Involucre glabrous. *H.L. Bell 642*.
- ERIOGONUM RIXFORDII S. Stokes. Pagoda wild buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional. Stout branches in several tiers. *H.L. Bell 1277*.
- ◆ ERIOGONUM ROSENSE A. Nelson & P.B. Kenn. var. ROSENSE. Mount Rose buckwheat. Matting perennial. "Last Chance Mountains, near summit." *M. DeDecker 1447a* !, 30 May 1962 (RSA). Annotated as var. *rosense* by J. Reveal in 2004. Inflorescence head-like, involucre glandular and sparsely hairy.
- ◆ § ERIOGONUM SHOCKLEYI S. Watson var. SHOCKLEYI. Shockley's buckwheat. Matting perennial. CRPR status 4.3. "Whitetop Peak, Last Chance Mountains." *J.C. Roos 6484* !, 21 July 1955 (RSA); "Last Chance Mountains, about 1 mi northeast of Crater Mine." *M. DeDecker 2621* !, 8 May 1971 (RSA). Fruit tomentose, inflorescence head-like.
- ERIOGONUM THOMASII Torr. Thomas' wild buckwheat. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas, hillsides, and washes. Common. Outer perianth lobes sac-like, glandular, yellow to cream with rosy midvein. *H.L. Bell 1307*.
- ERIOGONUM TRICHOPES Torr. Little desert trumpet. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Tends to be locally abundant, airy growth form produces yellow haze across landscapes, stem occasionally inflated, glabrous, flowers soft-hairy. *H.L. Bell 1214*.
- ERIOGONUM UMBELLATUM Torr. var. VERSICOLOR S. Stokes. Sulphur colored buckwheat. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland, Calcareous Rock Outcrops. Steep rocky ridge on northeast end of Last Chance Range. Uncommon, but can be locally frequent. Flowers yellow, aging to red-brown, stipe present. *S.J. De Groot 11210*.
- ERIOGONUM WRIGHTII Benth. var. WRIGHTII. Wright's bastard sage. Subshrub or shrub. *Coleogyne ramosissima* Shrublands. Bajadas and washes. Uncommon in eastern Inyo County. Stems grayish from tomentose hairs, stout, erect, involucre sessile, pink to rose appearing rusty. *H.L. Bell 1749*.
- MUCRONEA PERFOLIATA (A. Gray) A. Heller. Perfoliate spineflower. Annual. *Pinus monophylla* Woodland. Disturbed hillside above Willow Spring, north end of Last Chance Range. Uncommon in Inyo County. Bracts appear triangular around stem, entire plant dark red, involucre cylindric. *H.L. Bell 1665*. First collection from the study area, range extension to the northeast.
- ◆ OXYTHECA DENDROIDEA Nutt. subsp. DENDROIDEA. Tree-like puncture bract. Annual. "Last Chance Mts. 2 mi NE of Willow Spring near Nevada border." *J.C. Roos 6474* ! 20 July 1955 (RSA). Bracts free, involucre peduncled.
- OXYTHECA PERFOLIATA Torr. & A. Gray. Round leaf puncture bract. Annual. *Larrea tridentata-Ambrosia dumosa* Shrubland, *Yucca brevifolia* Woodland. Bajadas and washes. Common. Bracts appear circular around stem, leaves and bracts have an orange to brown cast, involucre funnel-shaped. *H.L. Bell 1187*.

PRIMULACEAE

- § PRIMULA PAUCIFLORA (Greene) Mast & Reveal. Beautiful shooting star. Perennial. Understory of *Pinus monophylla* woodland. In damp soil below Last Chance Spring, with *Cirsium mohavense*. CRPR status 4.2. Fruit 5-valved. [Syn. = *Dodecatheon pulchellum* (Raf.) Merr.]. *H.L. Bell 1358*.

RANUNCULACEAE

- CLEMATIS LIGUSTICIFOLIA Nutt. Western virgin's bower. Woody vine. *Pinus monophylla* Woodland. Steep narrow canyon ENE of Last Chance Spring. Locally frequent, but uncommon in study area. Leaflets 5–15, inflorescence many-flowered. *S.J. De Groot 9964*.
- DELPHINIUM PARISHII A. Gray subsp. PARISHII. Sky blue larkspur. Perennial. *Larrea tridentata* Shrubland. Extensive bajada at north end of Death Valley. Common, locally abundant. Sepals sky blue, lateral ones reflexed. *H.L. Bell 1348*.
- RANUNCULUS CYMBALARIA Pursh. Alkali buttercup. Perennial. Alkaline seep with *Salix lasiolepis*. Roadside at Willow Spring at the northern end of Last Chance Range. Occasional. Leaf tips rounded, margins crenate. *S.J. De Groot 11334*.
- * RANUNCULUS TESTICULATUS Crantz. Curveseed butterwort. Annual. *Coleogyne ramosissima* Shrublands. Shallow wash southeast of canyon to Last Chance Spring. Uncommon. Fruit wall thick, no cauline leaves. *H.L. Bell 1361*.

ROSACEAE

- AMELANCHIER UTAHENSIS Koehne. Utah service berry. Shrub. Edge of *Pinus monophylla* woodland. South-facing slope at the mouth of canyon to Last Chance Spring. Uncommon in eastern Inyo County. Stem unarmed, leaf simple, finely hairy abaxially, fruit blue-black. *H.L. Bell 1403*.
- CERCOCARPUS LEDIFOLIUS Nutt. var. INTRICATUS (S. Watson) M.E. Jones. Curlleaf mountain-mahogany. Shrub to small tree. *Pinus monophylla-Juniperus osteosperma* Woodland, *Coleogyne ramosissima* Shrublands. Shallow wash southeast of Last Chance Canyon, also on rocky hillsides. Occasional. Plants highly branched, leaf blade 3–10 mm, margin entire, inrolled to midrib. *H.L. Bell 1412*.
- COLEOZYNE RAMOSISSIMA Torr. Blackbrush. Shrub. *Coleogyne ramosissima* Shrubland and *Pinus monophylla* Woodland. East side of Last Chance Range, in canyon to Last Chance Spring and washes south of Last Chance Spring. Common. Erect shrub with bright yellow sepals, petals 0 or reduced. *H.L. Bell 1385*.
- PERAPHYLLUM RAMOSISSIMUM Nutt. Wild crab apple. Shrub. *Larrea tridentata-Ambrosia dumosa* clustered on short shoots. *H.L. Bell 1082*. First collection from the study area.
- PETROPHYTUM CAESPITOSUM (Nutt.) Rydb. subsp. CAESPITOSUM. Rock spirea. Matted shrub. *Pinus monophylla-Juniperus osteosperma-Yucca*

brevifolia Woodland, Calcareous Rocky Outcrops. Rocky hillside on the east side of Last Chance Range. Occasional, may be locally frequent. Forms dense mats on cliffs. *S.J. De Groot 10875*.

PRUNUS ANDERSONII A. Gray. Desert peach. Thorny shrub. Desert Scrub. Mixed habitats along north end of Last Chance Range, near Willow Spring. Common. Petals > 5 mm, dark pink to white, leaf finely serrate, 2–6 mm wide. *H.L. Bell 1354*.

PRUNUS FASCICULATA (Torr.) A. Gray var. *FASCICULATA*. Desert almond. Shrub. *Pinus monophylla*-*Yucca brevifolia* Woodland. Narrow rocky canyon on the east side of Last Chance Range. Uncommon. Petals < 4 mm, white to yellow, leaf 1–2 mm wide, puberulent. *S.J. De Groot 11152*.

PURSHIA STANSBURYANA (Torr.) Hendrickson. Cliffrose. Shrub. Desert Scrub. Disturbed area near Crater Mine site. Common. Styles in fruit plumose. *H.L. Bell 1601*.

PURSHIA TRIDENTATA (Pursh) DC. var. *GLANDULOSA* (Curran) M.E. Jones. Bitterbrush. Shrub. *Coleogyne ramosissima* Shrubland. Shallow wash on east side of Last Chance Range, southeast of the mouth of the canyon to Last Chance Spring. Common. Styles in fruit not plumose, twigs glandular, petals 4–8 mm. *H.L. Bell 1411*.

ROSA WOODSII Lindl. subsp. *GRATISSIMA* (Greene) W.H. Lewis & Ertter. Mojave rose. Shrub, may form thickets. Riparian scrub surrounded by Desert Scrub. Seep southeast of Last Chance Spring. Uncommon in study area, but abundant at seep. Leaves pinnately compound, axis velvety, prickles many. *S.J. De Groot 9980*.

RUBIACEAE

GALIUM ARGENSE Dempster & Ehrend. Argus bedstraw. Perennial. *Pinus monophylla* Woodland, Calcareous Rock Outcrop. Limestone ridge on the north end of Last Chance Range. Uncommon. Leaves at a node more or less equal. *S.J. De Groot 11209*.

GALIUM MULTIFLORUM Kellogg. Kellogg's bedstraw. Dioecious perennial. *Pinus monophylla*-*Juniperus osteosperma* Woodland. North border of Death Valley National Park and northern end of Last Chance Range, and Last Chance Canyon. Common in northern Inyo County. Leaves at a node unequal. *H.L. Bell 1637*.

RUTACEAE

◆ *THAMNOSMA MONTANA* Torr. & Frém. Turpentine broom. Shrub. "Last Chance Mountains, east of sand dunes at south end of Eureka Valley." *P.A. Munz 20578* !, 8 Apr 1955 (RSA). Rare in study area, leaves simple, alternate, herbage and fruits gland-dotted.

SALICACEAE

SALIX EXIGUA Nutt. var. *EXIGUA*. Narrowleaf willow. Tree or shrub. Riparian area surrounded by Desert Scrub. Seep in a side canyon of Last Chance Canyon. Common, but restricted to seeps in the study area. Leaf blade linear, twig and leaf hairs appressed. *S.J. De Groot 11192*.

SALIX LASIOLEPIS Benth. Arroyo willow. Tree or shrub. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Common. Leaf base wedge to convex shaped, leaves rolled under. *S.J. De Groot 11068*.

SARCOBATAEAE

SARCOBATUS VERMICULATUS (Hook.) Torr. Greasewood. Thorny shrub, monoecious. *Coleogyne ramosissima*-*Pinus monophylla* Shrubland. South-facing slope at mouth of canyon to Last Chance Spring. Occasional. Leaves bright to yellow green, linear, glabrous. *H.L. Bell 1759*.

SCROPHULARIACEAE

BUDDLEJA UTAHENSIS Coville. Panamint butterfly bush. Shrub. Calcareous Rock Outcrops. East side of Last Chance Range, usually on or near

cliffs or rocky hillsides with limestone outcrops. Common in eastern Inyo County. Plant densely hairy throughout, inflorescence spheric, flowers yellow. *S.J. De Groot 10821*.

SOLANACEAE

LYCIUM ANDERSONII A. Gray. Desert wolfberry. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Plants glabrous, flowers narrowly funnel shaped, calyx lobes generally < 2 mm. *H.L. Bell 1086*.

LYCIUM COOPERI A. Gray. Peach thorn. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Less common than *L. andersonii*, especially in eastern Inyo County. Plants glandular, puberulent, flowers narrowly bell shaped, calyx lobes generally > 2 mm. *H.L. Bell 971*.

* *NICOTIANA ACUMINATA* (Graham) Hook. var. *MULTIFLORA* (Phil.) Reiche. Manyflower tobacco. Annual. Alkaline seep with *Salix lasiolepis*. Willow Spring. Very uncommon in Inyo County. Cauline leaves petioled. *H.L. Bell 1657*. First collection in the study area, range extension to the east.

NICOTIANA OBTUSIFOLIA M. Martens & Galeotti. Desert tobacco. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Gravelly washes, rocky slopes. Uncommon in northern Inyo County, at the north end of range. Cauline leaves sessile to clasping. *H.L. Bell 1223*.

PHYSALIS CRASSIFOLIA Benth. Yellow nightshade groundcherry. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Occasional in Inyo County. Pedicel longer than flower. *H.L. Bell 707*.

◆ * *SOLANUM TRIFLORUM* Nutt. Three-flowered nightshade. Annual. "Last Chance Mountains, Willow Spring." *J.C. Roos 6495* !, 21 July 1955. (RSA). Leaf deeply lobed.

TAMARICACEAE

* *TAMARIX CHINENSIS* × *RAMOSISSIMA*. Saltcedar. Shrub. Riparian area surrounded by Desert Scrub. Seep east of Last Chance Spring. Uncommon. Stamens attached between lobes of nectary disk. *S.J. De Groot 11226*. See discussion of non-native taxa in text.

VISCACEAE

ARCEUTHOBIUM CAMPYLOPODUM Engelm. Western dwarf mistletoe. Parasitic perennial, on *Pinus monophylla*. *Pinus monophylla*-*Yucca brevifolia* Woodland. Hillsides at north end of Last Chance Range. Common, but infrequent at this site. Larger branches not whorled, stem yellow to brown, < 20 cm. *S.J. De Groot 11042*.

PHORADENDRON JUNIPERINUM A. Gray. Juniper mistletoe. Parasitic perennial on juniper. *Pinus monophylla*-*Juniperus osteosperma*-*Yucca brevifolia* Woodlands. West of Last Chance Spring. Uncommon in Inyo County. Stem glabrous, green or yellow green, > 20 cm, leaves scale-like. *H.L. Bell 1389*.

VITACEAE

VITIS CALIFORNICA Benth. California wild grape. Woody vine. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Narrow canyon on the east side of Last Chance Range, leads to Last Chance Spring. Rare in Inyo County, possibly planted by miners. Stems glaucous. *H.L. Bell 1819*.

VITIS GIRDIANA Munson. Desert wild grape. Woody vine. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Occasional in Inyo County. Young and mature stems densely tomentose. *H.L. Bell 1514*.

ZYGOPHYLLACEAE

LARREA TRIDENTATA (DC.) Coville. Creosote Bush. Shrub. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common and widespread. Leaflets 2, fused at base. *H.L. Bell 738*.

ANGIOSPERMS—MONOCOTS

AGAVACEAE

YUCCA BREVIFOLIA Engelm. Joshua tree. Tree. *Pinus monophylla*-*Yucca brevifolia* Woodland, Desert Scrub. Northern end of Last Chance Range. Common, locally abundant, generally found above 1600 m. Leaf margins minutely serrate, not shredding. *H.L. Bell 1687*.

AMARYLLIDACEAE

◆§ *ALLIUM ATRORUBENS* S. Watson var. *CRISTATUM* (S. Watson) McNeal. Inyo onion. Bulb forming geophyte. CRPR status 4.3. "Last Chance Mountains, Death Valley drainage, ridge west of Last Chance Spring." *M. DeDecker 4689* !, 24 May 1978. (RSA). Perianth parts deep red-purple.

§ *ALLIUM NEVADENSE* S. Watson. Nevada onion. Bulb forming geophyte. *Pinus monophylla* Woodland, *Coleogyne ramosissima* Shrublands. Rocky ridge at north end of Last Chance Range. Occasional. CRPR status 2B.3. Flowers white with red midveins. *S.J. De Groot 11199*.

ASPARAGACEAE

* *ASPARAGUS OFFICINALIS* L. subsp. *OFFICINALIS*. Asparagus. Perennial. *Pinus monophylla* Woodland. Highly disturbed area around Last Chance Spring. Uncommon except in cultivation, possibly planted at this site. Plant erect. *H.L. Bell 1392*.

CYPERACEAE

CAREX PRAEGRACILIS W. Boott. Black creeper. Rhizomatous perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Common. Anther awns minutely hairy. *H.L. Bell 1509*.

ELEOCHARIS MACROSTACHYA Britton. Pale spikerush. Perennial. Riparian area surrounded by *Pinus monophylla* Woodland. Highly disturbed area around Last Chance Spring. Uncommon in Inyo County. Plants to 100 cm. *H.L. Bell 1395*. First collection from the study area.

ELEOCHARIS PARISHII Britton. Parish's spikerush. Perennial. Riparian area surrounded by *Pinus monophylla* Woodland and *Coleogyne ramosissima* Scrub. Highly disturbed area around Last Chance Spring. Occasional in Inyo County, but common at this site. Leaf sheath tips with tooth-like projections. *H.L. Bell 1396*.

ELEOCHARIS ROSTELLATA (Torr.) Torr. Beaked spikerush. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Little Sand Spring at the northern end of Death Valley. Occasional in Inyo County. Stems more or less flat. *H.L. Bell 1486*.

SCHOENOPECTUS AMERICANUS (Pers.) Volkart ex Schinz & R. Keller. Olney's three-square bulrush. Perennial. Riparian scrub surrounded by *Coleogyne ramosissima* Shrublands (also Sand Spring). Seep on east side of Last Chance Range, southeast of Last Chance Spring. Common. Stem three-sided, plant mat forming, rhizomes long, leaf blades 1–6. *S.J. De Groot 9973*.

SCHOENOPECTUS CALIFORNICUS (C.A. Mey) Soják. Southern bulrush. Perennial. *Coleogyne ramosissima*-*Pinus monophylla* Shrubland. South-facing slope above mouth of canyon to Last Chance Spring. No records from Inyo County. Stem cylindric. *H.L. Bell 1761*. First collection from study area.

IRIDACEAE

§ *SISYRINCHIUM FUNEREUM* E.P. Bicknell. Death Valley blue-eyed grass. Short-lived rhizomatous perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. CRPR status 1B.3. Leaves basal and cauline, stem to 70 cm. *H.L. Bell 1504*.

JUNCACEAE

JUNCUS BALTICUS Willd. subsp. *ATER* (Rydb.) Snogerup. Baltic rush. Rhizomatous perennial. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Common in northern Inyo County. Inflorescence open, stem dark green, leaves not stem-like, < 1 cm or 0. *H.L. Bell 1655*.

JUNCUS BUFONIUS L. var. *BUFONIUS*. Toad rush. Annual. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Uncommon in Inyo County. Plant branched from base. *H.L. Bell 1646*. First collection from the study area.

JUNCUS MEXICANUS Willd. Mexican rush. Rhizomatous perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Little Sand Spring at northern end of Death Valley. Occasional in Inyo County. Rhizome long, creeping, plant spreading, leaves stem-like, > 5 cm. *H.L. Bell 1485*.

LILIACEAE

CALOCHORTUS BRUNEAUNIS A. Nelson & J.F. Macbr. Bruneau mariposa lily. Bulb-forming perennial. *Pinus monophylla*-*Juniperus osteosperma* Woodland. Rocky hillside west of Last Chance Spring. Uncommon in eastern Inyo County. Petals white. *S.J. De Groot 11198*.

CALOCHORTUS KENNEDYI Porter var. *KENNEDYI*. Desert mariposa lily. Bulb-forming perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. East of Crankshaft Junction on a rocky bajada. Uncommon. Petals orange to red. *H.L. Bell 1437*.

CALOCHORTUS KENNEDYI Porter var. *MUNZII* Jeps. Munz's mariposa lily. Bulb-forming perennial. Desert Scrub, Calcareous Rock Outcrops. Talus slope of gray limestone north of Crater Mine in Last Chance Range. Rare in Inyo County. Petals yellow. *S.J. De Groot 11095*. First collection from the study area, range extension to the north.

ORCHIDACEAE

EPIPACTIS GIGANTEA Hook. Stream orchid. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Uncommon except at seeps. Lip proximally concave, distally grooved. *H.L. Bell 1757*.

POACEAE

ALOPECURUS AEQUALIS Sobol. var. *AEQUALIS*. Short awn foxtail. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Uncommon in Inyo County. Awn straight, glumes ciliate-keeled. *H.L. Bell 1719*. First collection from study area.

ARISTIDA PURPUREA Nutt. var. *NEALLEYI* (Vasey) Allred. Nealley three-awn. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Limestone outcrop west of the mouth of Cucomungo Canyon in northern Eureka Valley. Common in Inyo County. Awns delicate. *S.J. De Groot 11013*.

§ *BLEPHARIDACHNE KINGII* (S. Watson) Hack. King's eyelash grass. Cespitose perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, Calcareous Rock Outcrops. Road through Last Chance Range, east of Crater sulfur mine. CRPR status 2B.3, center of distribution in Nevada. All parts of the lemma with short, eyelash-type hairs. *H.L. Bell 1915*. May grow with *Dasyochloa pulchella*.

◆ *BOUTELOUA BARBATA* Lag. var. *BARBATA*. Sixweeks grama. Annual. "Canyon on west base of Last Chance Mountains, east of Eureka Valley Sand Dunes." *J.C. Roos 6531* !, 23 Aug 1955 (RSA); "Eureka Valley, gully just above northwest corner of Eureka Dunes." *M. DeDecker 4013* !, 2 Nov 1975 (RSA). Tip of lower floret lemma 2-lobed, awn from sinus.

§ *BOUTELOUA TRIFIDA* Thurb. ex S. Watson. Three awned grama. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. CRPR status 2B.3. Lower floret lemma tapered to awn. *H.L. Bell 805*.

- BROMUS ARIZONICUS (Shear) Stebbins. Arizona brome. Annual. *Coleogyne ramosissima* Shrublands. Bajadas and washes. Uncommon in Inyo County. Spikelet strongly flattened, upper glume = lemma. *H.L. Bell* 1427.
- * BROMUS BERTEROANUS Colla. Chilean chess. Annual. *Coleogyne ramosissima*-*Pinus monophylla* Shrubland. Disturbed area near Crater sulfur mine. Common. Lemma tip two-toothed, awn bent and/or twisted. *H.L. Bell* 1571.
- * BROMUS MADRITENSIS L. Red brome. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Invasive weed. Inflorescence branches < spikelets, florets overlapping. [Syn. = *Bromus madritensis* L. subsp. *rubens* (L.) Husn.]. *H.L. Bell* 1169.
- BROMUS SITCHENSIS Trin. var. MARGINATUS (Nees.) B. Boivin. Mountain brome. Perennial. *Pinus monophylla*-*Artemisia tridentata* Woodland. North end of Last Chance Range, northern border of Death Valley National Park. Uncommon in Inyo County. Spikelet flattened, upper glume < lower most lemma, lemma uniformly hairy. [Syn. = *B. carinatus* Hook. & Arn. var. *marginatus* (Steud.) Barkworth & Anderton]. *H.L. Bell* 1639.
- * BROMUS TECTORUM L. Cheat grass. Annual. *Pinus monophylla*-*Yucca brevifolia* Woodland. Wash at north end of Last Chance Range. Invasive weed. Plants to 40 cm with open, nodding inflorescence. *S.J. De Groot* 11039.
- DASYOCHLOA PULCHELLA (Kunth) Willd. ex Rydb. Low woolly grass. Matting perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Inflorescence not exceeding leaves, lemma with glabrous awn from between two lobes, hairy below. *H.L. Bell* 739.
- DISTICHLIS SPICATA (L.) Greene. Saltgrass. Salt-tolerant perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis* and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Common. Glumes two, leaves two-ranked. *H.L. Bell* 1510.
- ELYMUS CINEREUS Scribn. & Merr. Great Basin wild rye. Perennial. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Common in northern Inyo County. Plants cespitose, inflorescence not breaking apart, lemma awn ≤ 10 mm, stem node densely pubescent. *H.L. Bell* 1658.
- ELYMUS CONDENSATUS J. Presl. Giant wild rye. Perennial. *Pinus monophylla* Woodland. South-facing hillside above Last Chance Spring. Uncommon in Inyo County. Inflorescence branched. *H.L. Bell* 1753. First collection from the study area, range extension to the southeast.
- ELYMUS ELYMOIDES (Raf.) Swezey var. ELYMOIDES. Squirreltail. Perennial. *Pinus monophylla*-*Juniperus osteosperma*-*Yucca brevifolia* Woodland. South-facing hillside at north end of Last Chance Range. Uncommon in eastern Inyo County, common elsewhere. Inflorescence breaking apart, some glumes with 2–3 awn-like divisions. *S.J. De Groot* 11283.
- ELYMUS GLAUCUS Buckley. Western wild rye. Perennial. *Coleogyne ramosissima* Shrublands. Shallow washes on east side of Last Chance Range. Uncommon in Inyo County. Inflorescence not breaking apart, spikelets two per node, lemma awn > 10 mm. *H.L. Bell* 1408.
- ELYMUS MULTISETUS (S.G. Sm.) Burt Davy. Big squirreltail. Perennial. *Pinus monophylla* Woodland. Disturbed area near Crater Sulfur Mine. Common. Inflorescence breaking apart, Glumes 3–9-cleft, auricles present. *H.L. Bell* 1572.
- ELYMUS TRACHYCAULUS (Link) Gould ex Shinnars subsp. TRACHYCAULUS. Slender wheat grass. Perennial. Desert Scrub. Last Chance Range: Last Chance Spring. Common in Sierra Nevada, Whites and Inyos. Plants cespitose, spikelets 1 per node. *D.A. York* 2394 !, 20 Oct 2003 (DEVA).
- ELYMUS TRITICOIDES Buckley. Breadless wild rye. Perennial. Riparian scrub surrounded by *Coleogyne ramosissima* Shrublands. Seep on east side of Last Chance Range, southeast of Last Chance Spring. Common. Inflorescence not breaking apart, lemma awn ≤ 10 mm, stem node glabrous. *S.J. De Groot* 9972.
- FESTUCA OCTOFLORA Walter. Sixweeks grass. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland, *Coleogyne ramosissima* Shrubland. Bajadas and washes. Common but infrequent in study area. Spikelets closely overlapping. *H.L. Bell* 73.
- HILARIA JAMESII (Torr.) Benth. Galleta. Perennial. *Pinus monophylla*-*Yucca brevifolia* Woodland. North end of Last Chance Range. Common. Stem internodes glabrous to lightly hairy. *H.L. Bell* 1677.
- MUHLENBERGIA ASPERIFOLIA (Nees & Meyen ex Trin.) Parodi. Scratch grass. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Frequent at seeps, otherwise uncommon in study area. Lacks awns, inflorescence spreading. *H.L. Bell* 1720.
- MUHLENBERGIA PORTERI Scribn. ex Beal. Bush muhly. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon in Inyo County. Nodes knot-like, inflorescence open, spreading, lemmas awned. *H.L. Bell* 1081.
- MUHLENBERGIA RICHARDSONIS (Trin.) Rydb. Mat muhly. Rhizomatous perennial. *Coleogyne ramosissima*-*Pinus monophylla* Shrubland. South-facing slope just outside of mouth of Last Chance Canyon. Uncommon in Inyo County. Inflorescence axis obscured, lacks awns. *H.L. Bell* 1763.
- ♦ MUHLENBERGIA UTILIS (Torr.) Hitchc. Aparejo grass. Perennial. “Death Valley: North end; Big Sand Springs; northwest of main springs.” *M. DeDecker* 5043 !, 24 May 1980 (RSA). Inflorescence axis visible, branches ascending, florets lacking awns.
- PHRAGMITES AUSTRALIS (Cav.) Steud. Common reed. Rhizomatous perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Sand Spring at the northern end of Death Valley. Common. Stem to 4 m. *H.L. Bell* 1729.
- POA BIGELOVII Vasey & Scribn. Bigelow’s blue grass. Annual. Desert scrub. Base of limestone cliffs of on east side of Last Chance Range. Uncommon. Inflorescence branches appressed, callus with cobwebby hairs. *S.J. De Groot* 10812.
- POA FENDLERIANA (Steud.) Vasey subsp. LONGILIGULA (Scribn. & T.A. Williams) Soreng. Long-tongue mutton grass. Perennial. *Yucca brevifolia* Woodland. Rocky chute on the northeast side of Last Chance Range. Uncommon in Inyo County. Plant cespitose, dioecious, ligule to 18 mm, lemma hairy. *S.J. De Groot* 10876.
- POA SECUNDA J. Presl subsp. JUNCIFOLIA (Scribn.) Soreng. Nevada blue grass. Cespitose perennial. Riparian scrub surrounded by *Coleogyne ramosissima* Shrubland. Seep on east side of Last Chance Range, southeast of Last Chance Spring. Common at seep. Ligule ≤ 6 mm, lemma glabrous. *S.J. De Groot* 9974.
- POA SECUNDA J. Presl subsp. SECUNDA. One-sided blue grass. Perennial. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Common. Ligule ≤ 10 mm, lemma short hairy on keel. *H.L. Bell* 1531.
- * POLYPOGON INTERRUPTUS Kunth. Ditch beard grass. Perennial. Riparian area surrounded by *Pinus monophylla*-*Juniperus osteosperma* Woodland, *Coleogyne ramosissima* Shrubland. Seep west of Last Chance Spring in northeastern Last Chance Range. Rare in Inyo County, common in California. Glume awn 1.5–4.5 mm, glume lobes 0. *S.J. De Groot* 11219.
- * POLYPOGON MARITIMUS Willd. Mediterranean beard grass. Annual. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus americanus*. Little Sand Spring. Very uncommon. Lemma awnless. *H.L. Bell* 1483. First collection from the study area, range extension to the east.
- * POLYPOGON MONSPELIENSIS (L.) Desf. Rabbitfoot grass. Annual. Riparian area surrounded by Desert Scrub. Seep south of Last Chance Spring. Common, invasive weed. Glume lobed, awn 2–10 mm. *S.J. De Groot* 9970.
- * SCHISMUS ARABICUS Nees. Arabian schismus. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Invasive weed. Palea of lowest floret acute, shorter than lemma, lemma teeth narrowly triangular, acute. *H.L. Bell* 1060.
- * SCHISMUS BARBATUS (L.) Thell. Mediterranean grass. Annual. *Larrea tridentata*-*Ambrosia dumosa* Shrubland. Bajadas and washes. Invasive weed. Palea of lowest floret obtuse, longer than lemma, lemma teeth widely triangular, obtuse. *H.L. Bell* 1462.
- SPOROBOLUS AIROIDES (Torr.) Torr. Alkali sacaton. Perennial. Alkaline seep with *Distichlis spicata*, *Phragmites australis*, and *Schoenoplectus ameri-*

- canus*. Sand Spring at the northern end of Death Valley. Common. Inflorescence spreading, glume back rounded. *H.L. Bell 1508*.
- SPOROBOLUS CRYPTANDRUS (Torr.) A. Gray. Sand dropseed. Perennial. Desert scrub. Rocky wash draining into the Eureka Valley from foothills of the Inyo Mountains. Common in northern Inyo County. Inflorescence branches appressed. *S.J. De Groot 10998*.
- SPOROBOLUS FLEXUOSUS (Thurb. ex Vasey) Rydb. Mesa dropseed. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and washes. Uncommon. Glume back keeled. *H.L. Bell 712*.
- § STIPA ARIDA M.E. Jones. Mormon needle grass. Perennial. Desert scrub. Ridge top on east side of Last Chance Range. Occasional. CRPR status 2B.3. Distal awn more or less wavy, base glabrous. *S.J. De Groot 10883*.
- STIPA COMATA Trin. & Rupr. var. COMATA. Needle and thread. Perennial. *Pinus monophylla-Juniperus osteosperma* Woodland. Hillside on northeast side of Last Chance Range. Common in northern Inyo County, occasional in study area. Distal awn segment ≥ 40 mm, wavy or curled. *S.J. De Groot 11139*.
- STIPA HYMENOIDES Roem. & Schult. Sand rice grass. Perennial. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance, *Larrea tridentata-Ambrosia dumosa* Shrubland, Desert Scrub. Dune margins, sandy and rocky areas. Common. Inflorescence a spreading panicle, florets obovoid, awn deciduous. *H.L. Bell 893*.
- STIPA PARISHII Vasey var. PARISHII. Parish's needlegrass. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland with *Ephedra* spp., *Pinus monophylla-Juniperus osteosperma* woodland. Bajadas and rocky outcrops. Occasional. Sheath flat and ribbon-like, awn bent $1\times$. *H.L. Bell 864*.
- ◆ STIPA PINETORUM M.E. Jones. Pinewoods needle grass. Perennial. "White Top Peak, summit Last Chance Mountains." *J.C. Roos 6480* !, 21 July 1955. (RSA). Sheaths not flat and ribbon-like in age, awn bent $2\times$.
- STIPA SPECIOSA Trin. & Rupr. Desert needlegrass. Perennial. *Larrea tridentata-Ambrosia dumosa* Shrubland. Bajadas and rocky outcrops. Common. Lemma awn base long hairy and feather-like. *H.L. Bell 1222*.
- ◆ STIPA THURBERIANA Piper. Thurber's needlegrass. Perennial. "2 mi. NE of Willow Spring, Last Chance Mts, on California-Nevada border." *J.C. Roos 6462* !, 21 June 1955 (RSA). Distal leaves with ligules 3–8 mm.
- § SWALLENIA ALEXANDRAE (Swallen) Soderstr. & H.F. Decker. Eureka Valley dune grass. Perennial. *Dicoria canescens-Abronia turbinata* Sparsely Vegetated Alliance. CRPR status 1B.2 (USFWS downlisted to threatened on 29 Mar 2018). Narrow endemic, restricted to 3 occurrences on dunes in the Eureka Valley. Stems stout, leaves highly pungent. *H.L. Bell 1152*.
- ◆ TRIDENS MUTICUS (Torr.) Nash. var. MUTICUS. Slim tridens. Perennial. West base Last Chance Mountains, east of Eureka Valley sand dunes. *J.C. Roos 6339* !, 13 May 1955. (RSA). Lemma veins 3, hairy, awns 0.

THEMIDACEAE

- DIPTEROSTEMON CAPITATUS (Benth.) Rydb. subsp. CAPITATUS. Blue dicks. Perennial from corms. *Pinus monophylla-Yucca brevifolia* Woodland. North end of Last Chance Range. Uncommon in Inyo County. Bracts generally dark purple. [Syn. = *Dichelostemma capitatum* (Benth.) Alph. Wood subsp. *capitatum*]. *H.L. Bell 1634*. First collection from the study area, range extension to the northeast.

TYPHACEAE

- TYPHA DOMINGENSIS Pers. Southern cattail. Perennial. Alkaline seep with *Salix lasiolepis*. Willow Spring at the northern end of Last Chance Range. Uncommon in Inyo County. Adaxial leaf blades dotted with glands near base. *S.J. De Groot 11337*.