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**THE VASCULAR FLORA OF THE UPPER SANTA ANA RIVER  
WATERSHED,  
SAN BERNARDINO MOUNTAINS, CALIFORNIA**

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*All Photos by Naomi S. Fraga*

**ABSTRACT:** We present an annotated catalogue of the vascular flora of the upper Santa Ana River watershed, in the southern San Bernardino Mountains, in southern California. The catalogue is based on a floristic study, undertaken from 2008 to 2010. Approximately 65 team days were spent in the field and over 5,000 collections were made over the course of the study. The study area is ca. 155 km<sup>2</sup> in area (40,000 ac) and ranges in elevation from 1402 m to 3033 m. The study area is botanically diverse with more than 750 taxa documented, including 56 taxa of conservation concern and 81 non-native taxa. Vegetation and habitat types in the area include chaparral, evergreen oak forest and woodland, riparian forest, coniferous forest, montane meadow, and pebble plain habitats. The primary objectives of this study were to assess the conservation status of plant species that are of conservation concern, assess the status of non-native taxa, and to voucher and catalogue the vascular flora of this region. We report three taxa that are newly documented for the San Bernardino Mountains. Two of these are non-native: *Cardaria chalepensis* and *Humulus lupulus* var. *lupulus*. The third, *Senecio scorzonella* is a native species disjunct from the Sierra Nevada.

**KEYWORDS:** Floristics, San Bernardino Mountains, San Bernardino County, montane meadows, carbonate habitats, pebble plains, rare plants.

## **INTRODUCTION**

The San Bernardino Mountains are in the eastern portion of the Transverse Ranges, a predominantly east-west trending series of mountain ranges in southern California, USA. The San Bernardino Mountains are bounded by the San Gabriel Mountains to the west, the Little San Bernardino Mountains to the east, the San

Jacinto Mountains and San Bernardino Valley to the south, and the Mojave Desert to the north (Fig. 1). The San Bernardino Mountains are regarded as a significant hot spot for biodiversity and endemism, and hold a high concentration of endemic taxa of conservation concern (Krantz 1994; Kraft et al. 2010). There are at least 18 federally listed endangered or threatened plants within the region, one of the highest concentrations of such taxa in the nation (USFS 2011). The San Bernardino Mountains are also an important biogeographic region in western North America because many plant taxa otherwise known from the high Sierra Nevada or Rocky Mountains reach their southern range limits as disjunct occurrences in the range. Mount San Gorgonio is the tallest peak in the range, rising to over 11,500 ft (3505 m); the peak and the surrounding area represent the most significant alpine region in southern California (Krantz 1994; Sawyer and Keeler-Wolf 2007). In southern California, tree line generally occurs above 10,170 ft (3100 m) and only eight peaks in the Transverse Range exceed this elevation (Sawyer and Keeler-Wolf 2007).

The San Bernardino Mountains have long been of interest to botanists and have a rich history of botanical exploration (Grinnell 1908; Parish 1917; Krantz 1994). However, with the ever-changing conditions of natural areas owing to factors such as anthropogenic disturbance, introduction and spread of non-native taxa, and impending changes in plant distributions due to global climate change, the documentation of plant distributions continues to be essential to the assessment of botanical resources. Mapping and assessing biodiversity are the baseline data for conservation assessments and informed management decisions. Specimen-based inventories, such as this project, are especially valuable because the data collected in the form of herbarium specimens provide us with important information about plant diversity. Herbarium specimens are a permanent verifiable record of a plant's location in space and time, and provide documentation for a species' range in morphology and phenology.

The San Bernardino National Forest (SBNF) is planning a fuels management program for the upper Santa Ana River watershed. A systematic floristic inventory with a focus on plant taxa of conservation concern (i.e., special status taxa) and on non-native taxa has not been conducted previously in the area. Therefore, baseline data are needed for planning and analysis on the potential effects of fuels reduction treatments on special status, and non-native taxa within the project area. The primary objectives of this study were to: 1) conduct focused surveys for special status taxa, document and map them to inform fuels management planning and to assess their status; 2) document and map invasive non-native taxa of limited distribution, where weed abatement may be feasible; 3) document and catalogue the vascular flora of the upper Santa Ana River watershed in the San Bernardino Mountains to provide the SBNF with distributional information of

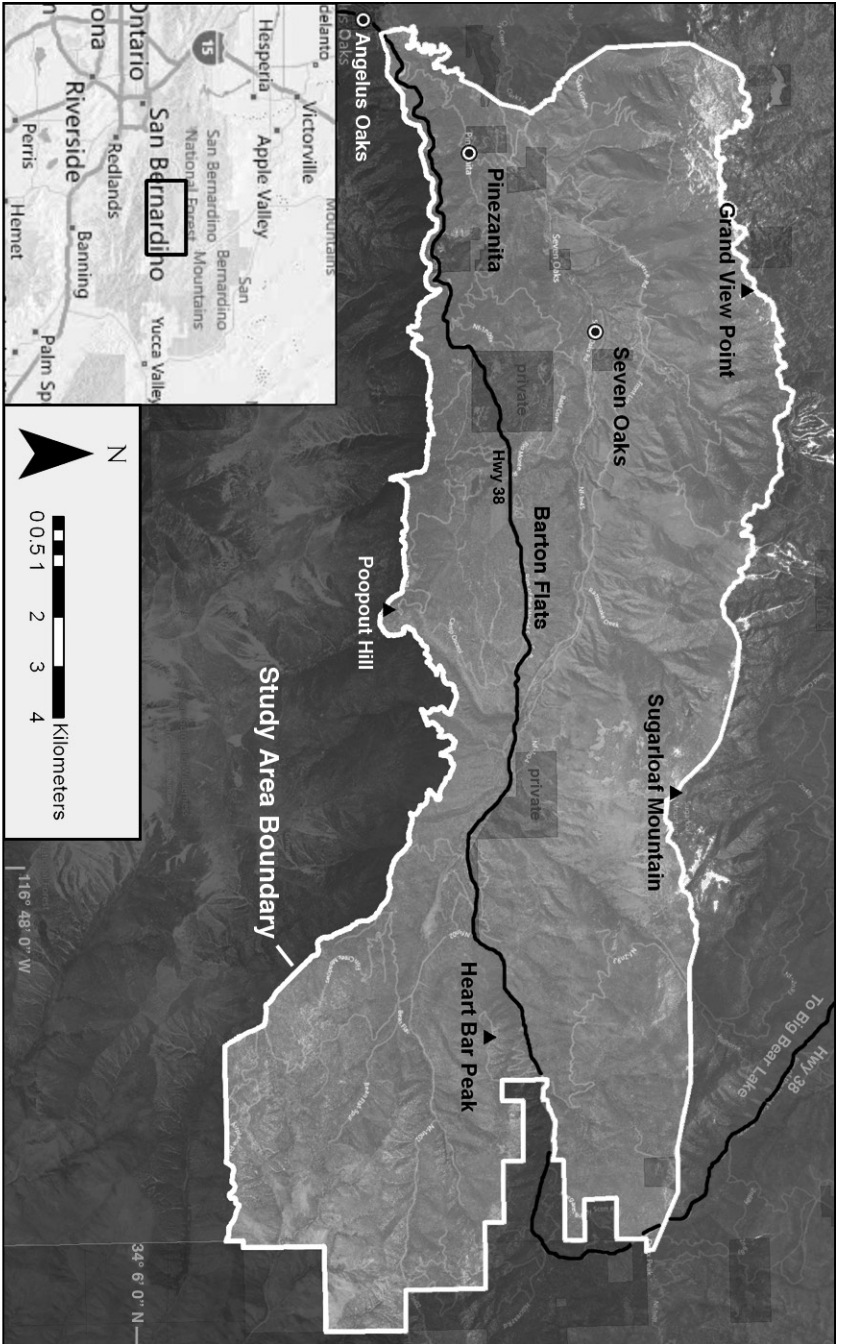


Figure 1: The Upper Santa Ana River study area.

vascular plants, and 4) provide recommendations for special status taxa and their habitats to facilitate pro-active rare plant management on the SBNF.

## **PHYSICAL SETTING**

### **Site Description**

The Santa Ana River drains the southern slopes of the San Bernardino Mountains, eastern San Gabriel Mountains, and San Jacinto Mountains; the eastern slopes of the Santa Ana Mountains; and the interior valleys surrounded by those ranges, including portions of southeastern Los Angeles County, southwestern San Bernardino County, and western Riverside County. It is one of the largest watersheds that lies wholly within southern California (Clarke et al. 2007). The study area defined here encompasses only a small fraction of the entire Santa Ana River watershed (ca. 6,200 sq km) and is ca. 155 sq km (40,000 ac) in area and ranges in elevation from 1402 m (4600 ft) near Filaree Flat, just below the town of Angelus Oaks, to 3033 m (9952 ft) at the summit of Sugarloaf Mountain (Fig. 1).

The upper Santa Ana River watershed is in the southern San Bernardino Mountains (Fig 2). It is bounded by the ridgeline between Ten Thousand Foot Ridge and San Bernardino Peak to the south; the ridgeline that divides it from Bear Valley (including Sugarloaf Mountain, Snow Summit, and Grandview Summit) to the north, and Onyx Summit to the east. This portion of the watershed is a broad mountain valley, called Santa Ana Canyon (Fig. 2).

The upper Santa Ana River watershed is entirely within the SBNF boundaries, and includes both public lands, managed by the SBNF, and private inholdings. The study area was delineated by SBNF staff, and is limited to the public lands the Forest Service manages. Private inholdings were excluded from the study area (Fig. 1). These include private camps and resorts (Seven Oaks, Weesha Club, and Camp Osceola) and the communities of Pinezanita and Angelus Oaks, both near the western boundary of the study area. The study area also excludes the San Gorgonio Wilderness, although portions of the Wilderness are within the Santa Ana River watershed, because the SBNF is not planning fuels management on those lands. The SBNF is considering three units within the Study Area for fuels reduction planning; these are: Santa Ana Back Country in the southeastern portion of the study area, Santa Ana River at the northern end of the study area, and Barton Flats at the southwestern part of the study area.

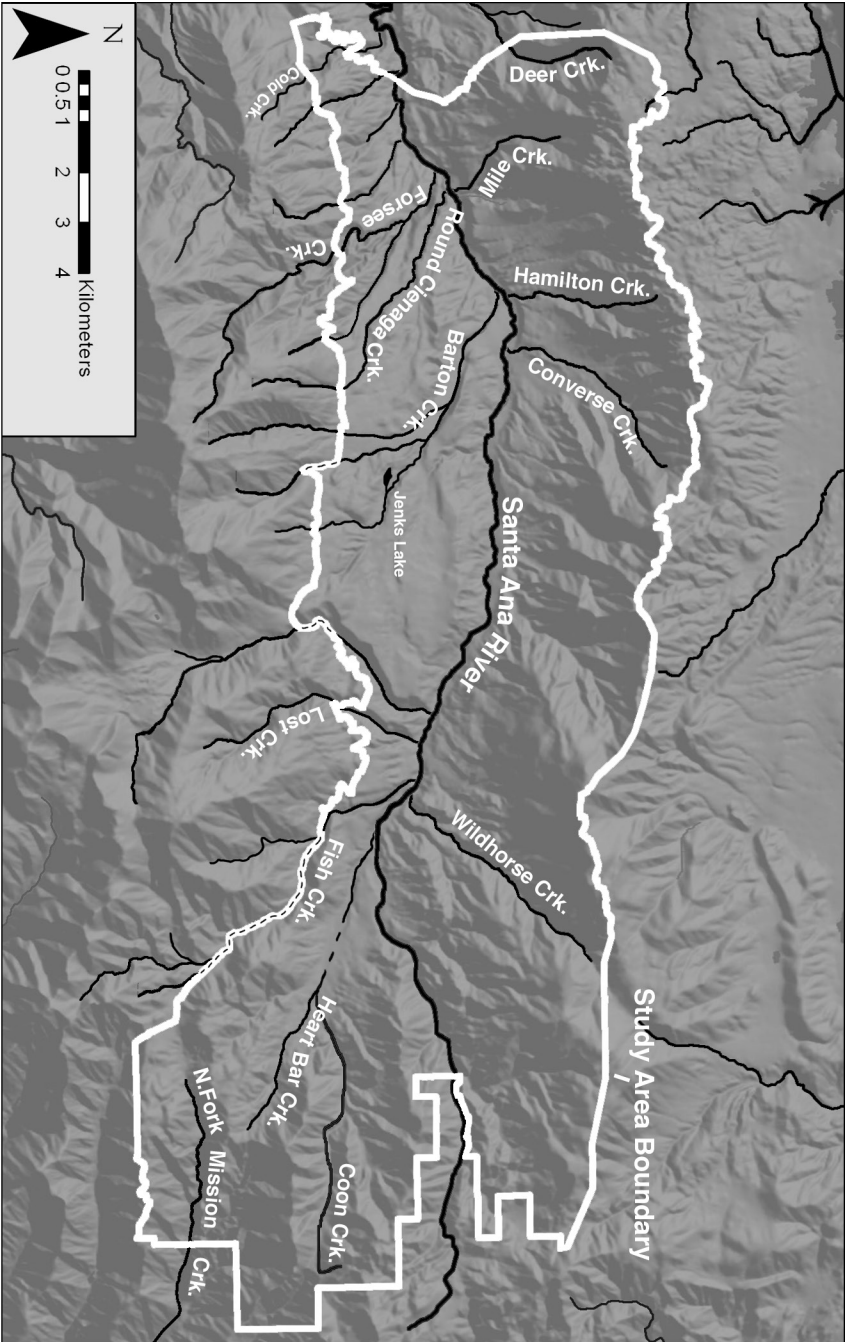


Figure 2: Hydrological map of the Santa Ana River Watershed. Major rivers and streams are labeled.

## Climate

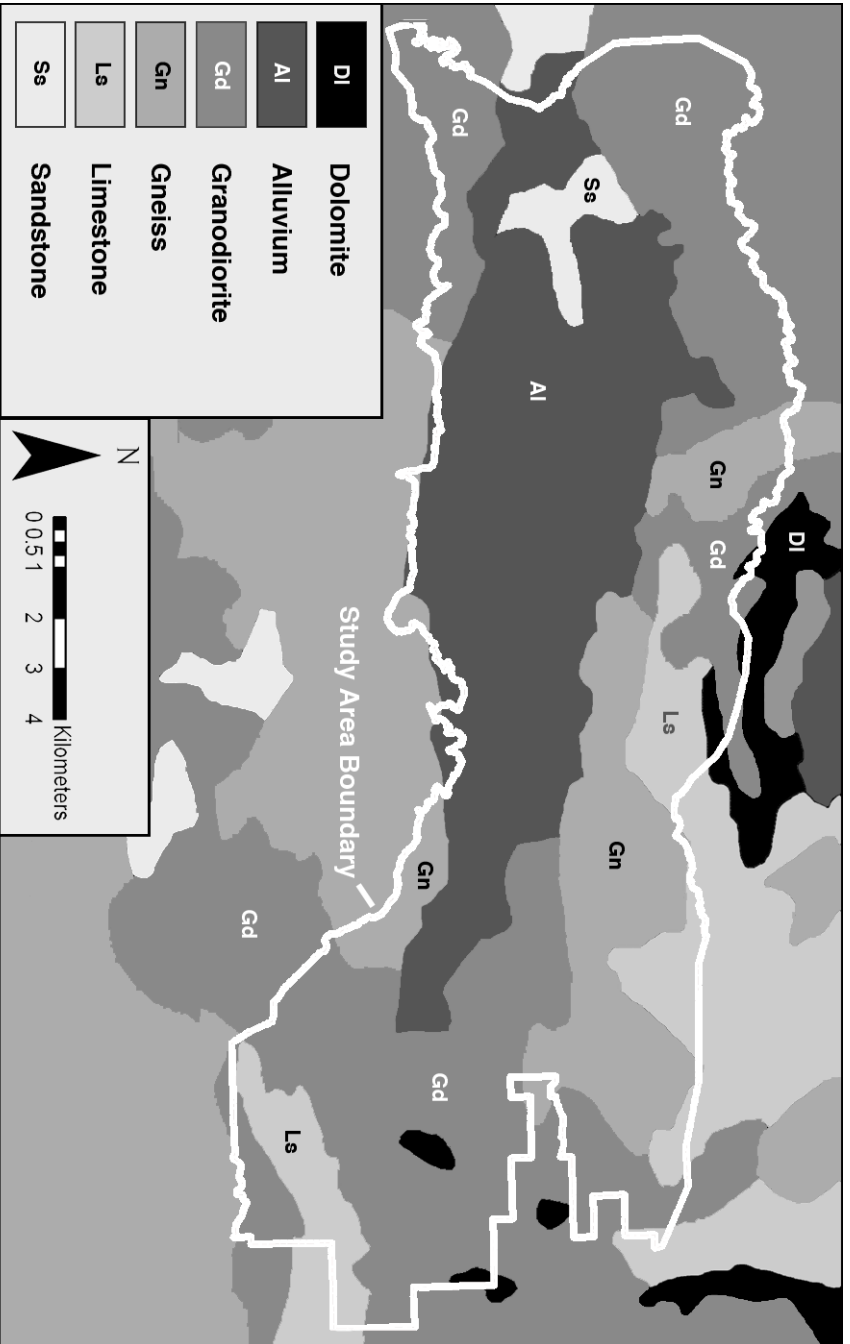
The climate of coastal southern California, including the upper Santa Ana River, is characterized as Mediterranean, with winter precipitation from October to April in the form of rain and snow, and an extended period of summer drought (Axelrod 1976; Minnich 2007a). However, during the summer months, there are occasional orographic monsoonal thunderstorms in the mountain regions, including the study area. Climate data summarized here and in Table 1 are from a weather station at Converse Flat, in the northwest part of the study area [Converse, California, 34° 11' 39" N, 116° 54' 47" W, at ca. 1700 m (5600 ft) elevation] (Western Regional Climate Center 2010). Most precipitation within the study area occurs between November and March. The average annual precipitation since 1997 has been ca. 41 cm (16.2 in). Over the course of the study (May 2008 - September 2010) the average annual precipitation was ca. 40 cm (15.9 in), with the most precipitation falling during winter of 2009-2010 [ca. 50 cm (19.7 in)]. The average temperature at Converse Flat is 12° C (54° F), with the average summer daily maximum temperature 28° C (82° F) and the average winter daily minimum temperature 5° C (41° F).

**Table 1:** A summary of climate data recorded for Converse Flat within the study area (Western Regional Climate Center 2010)

<b>Average Temperature</b>	<b>C (F)</b>	<b>12.0 (53.60)</b>
<b>Average Maximum Temperature</b>	<b>C (F)</b>	<b>28.16 (82.72)</b>
<b>Average Minimum Temperature</b>	<b>C (F)</b>	<b>4.83 (40.71)</b>
<b>Average Precipitation</b>	<b>mm (in)</b>	<b>411.48 (16.2)</b>

## Geology

The San Bernardino Mountains are composed primarily of ancient basement rocks that have been uplifted to their current elevation and include: granite, gneiss, basalt, metasedimentary, (carbonate and Sargossa quartzite), and sedimentary rocks (USGS 2011). Geologic substrates within the study area are mapped on Figure 3. The range is primarily composed of granitic blocks of Mesozoic age that were once part of the Mojave batholith. The granitic batholith was uplifted by the San Andreas Fault along the southern margin of the range (Hall 2007; Minich 1988). During this uplift, older quaternary sediments eroded and filled the valleys and basins; some of these sediments make up the present day surface of Barton Flats (USGSa 2011; see Fig. 3). The granite basement of the San Bernardino Mountains is primarily composed of quartz monzonite, diorite, and granodiorite rocks (Hall 2007). Carbonate rocks and clay deposits are of special significance



**Figure 3:** Geologic map of the Santa Ana River Watershed. GIS Shape file obtained from the USGS Mineral On-Line Spatial Data <http://tin.er.usgs.gov/geology/state/state.php?state=CA>



in the San Bernardino Mountains because of their role in biogeography and edaphically patterned endemism (Krantz 1994).

**Carbonate Rocks.** The carbonate rocks of the San Bernardino Mountains, including calcium carbonates (limestone) and calcium-magnesium carbonates (dolomite) belong to the Furnace formation; this formation was deposited by a shallow sea that covered most of the Mojave and Great Basin Deserts during the Cambrian and Pennsylvanian time (550-360 MYA) (Matti and Morton 2000). Thus, the San Bernardino Mountains are similar geologically to the mountains in the east Mojave Desert such as the Clark, Kingston, Providence, and New York Mountains that have exposed metasedimentary carbonate rocks (USGSb 2011). Within the study area, carbonate rocks are distributed along the west side of Sugarloaf Ridge and in isolated outcrops near Coon Creek (Fig. 3).

**Clay Deposits.** Clay soils in the San Bernardino Mountains are associated with two distinct habitat types that hold a high number of endemic taxa; these are meadows and pebble plains. The meadows in Bear Valley are usually associated with clay soils of lacustrine origin that are high in organic material (Krantz 1994). Within the study area, meadows do not appear to be of lacustrine origin and, instead, are found where sedimentation and stream hydrology provide for suitable soils and water table to support wet meadow vegetation (USGSa 2011). Several large wet meadows exist in the study area including Big Meadow, Horse Meadows, Sugarloaf Meadow, Wildhorse Meadow, and the lower end of the expansive South Fork Meadow system.

**Pebble plains** (or “pavement plains”) of Bear Valley are red clay deposits that are presumed to have formed from weathered granitic and metamorphic rock. These deposits are thought to have been displaced by continual uplift, erosion, and deposition during the Pleistocene, producing the present landscape of isolated pebble plains on ridgetops and high basins (Derby 1979). The clay deposits are intermixed with Saragossa quartzite rocks and covered with smaller quartzite cobble—a result of frost heave and wind erosion of finer clay particles (Derby 1978; 1979). Pebble plains in the study area are primarily distributed on Sugarloaf Ridge and Onyx Summit. Possible relict pebble plains or pebble plain-like habitat (open areas overlain with quartzite cobbles, but perhaps lacking clay soils) are patchily distributed throughout the higher elevations in the study area, in the vicinity of Heart Bar Peak, Coon Creek and Mission Creek.

## Fire History

Fire is an important ecological force in Mediterranean climate regions worldwide, including southern California forests and shrublands (Minnich 1988; Keeley and Davis 2007; Minnich 2007). There are several historic accounts of fire and its frequency within the study area from early settlers and residents of Santa Ana Canyon who primarily settled in the vicinity of Seven Oaks (reviewed by Minnich 1988). L.C. Miller wrote that fires had been “common over the whole Santa Ana River Valley...especially the land [that] was grazed by sheep and cattle...fires were annual occurrences and the old-timers say it was not uncommon for the whole valley to be burned over each season.” Abbott Kinney claimed that in 1895 there was a “fire war” among grazers in the Santa Ana River Canyon that resulted from a feud. Robert Coombs stated that in 1898 sheepherders set fire to Coon Canyon, which destroyed vast amounts of brush and timber. There were also numerous fires observed in the Converse Creek tributary. SBNF fire history records that began in 1911 reveal few fires of significant size in recent years within the study area; with the last fire of significant scale and intensity recorded in 1952 (USFS GIS layer 2010). Minnich et al. (1995) described vegetation changes in San Bernardino Mountains conifer forests, including study areas in the upper Santa Ana River watershed, corresponding to effective fire exclusion since the early 1930s.

## Human Impacts

By comparison with most of southern California, the upper Santa Ana River watershed has been relatively unaffected by anthropogenic changes. Yet it has seen tremendous change due to human impacts on the landscape over the past two centuries. Accounts of the many historic and current human influences that have affected the study area are provided below, especially as they relate to the changing landscape of the upper Santa Ana River watershed.

**Grazing.** Sheepherders were among the first to settle in Santa Ana Canyon (Minnich 1988). Captain Lorin Shawn Jenks who lived along the Santa Ana River for 30 years, provided accounts of grazing patterns and claimed that “sheep were driven along the Santa Ana River as early as 1860 and every year after until 1898...As many as 30,000 would be driven in one season.” Theodore P. Lukens noted that the devastating effects of sheep grazing were evident. Grazing intensities decreased in the late 1890s when the Forest Service prohibited sheep grazing; however cattle grazing continued in the range. We have seen no evidence of current or active livestock grazing within the study area. Remnant fencing, pens, ramps, water troughs, and other evidence of historic cattle grazing are still

found in several areas, including Clark's Ranch, Mile Creek, Sugarloaf Meadow, and Wildhorse Meadow.

**Water diversion.** Water diversion primarily from South Fork has been continuous since the latter half of the 19<sup>th</sup> century (Robinson 1991). Jenks built a trout pond, called Jenks Lake, in the mid 1870s. He built a dam and a ditch several miles long from "Slushy Meadows" (now known as South Fork Meadows) to divert water into Jenks Lake. Water is still diverted from South Fork Meadows to feed Jenks Lake. In addition, in 1921 Barton Flats was being developed as a water storage area and nearby stream water was diverted and spread onto the dry lands of Barton Flats (Robinson 1991).

**Recreation.** As early as 1927, Barton Flats was targeted for the development of a large public and group camp complex; at that time only about 20 acres had been developed (Robinson 1991). By the end of the 1930s there were 26 organization camps in the area including YMCA camps and the Osceola Boy Scout Camp. Today the Barton Flats area continues to be important for organization camps; some on private lands and others operating on public lands, under SBNF permit. The SBNF also operates numerous public campgrounds at Barton Flats and elsewhere in the study area. There also are several SBNF permitted cabin tracts on public lands in the vicinity of South Fork and the Santa Ana River. In addition to camping, the upper Santa Ana River watershed is a popular destination for fishing, and there are several trail systems for hiking, biking, and equestrian use throughout the study area, including the Pacific Crest Trail and the Santa Ana River Trail. There are no designated off-highway vehicle routes within the study area. Roads in the study area are only open to highway legal vehicles (SBNF 2011), but illegal off-highway and off-road vehicle use was observed commonly throughout the study including in areas where motorized vehicle traffic is not allowed. Illegal off-highway vehicle use was observed especially in the vicinity of Clark's Grade, Heart Bar Campground, on the Santa Ana River Trail, and Radford Road.

**Air Pollution.** For over forty years mixed coniferous forests in the mountains of southern California have been exposed to the highest levels of air pollution and nitrogen deposition in the United States (Templeton et al. 2005). Air pollution principally in the form of photochemical ozone and nitrogen compounds have had a significant effects on coniferous forests (primarily *Pinus jeffreyi* and *P. ponderosa*) including foliar injury, premature needle abscission, crown thinning, and reduced growth and vigor (Templeton et al 2005). A network of ozone analyzers were installed in the San Bernardino Mountains including two within the study area (Barton Flats and Heart Bar). However, ozone levels were found

to approach baseline levels and the two sites monitored were relatively clean sites (Templeton et al 2005).

## **Botanical Exploration**

The San Bernardino Mountains have had a rich history of botanical documentation and exploration. Samuel Parish (1838-1928) was the first prolific collector in the range, and many of the plant taxa of the San Bernardino Mountains were named for him. He was an avocational botanist who lived in San Bernardino Valley and published the first Flora for the San Bernardino Mountains, the *Enumerations of the Pteridophytes and Spermatophytes of the San Bernardino Mountains*, in 1917. Parish lacked formal botanical training, but was appointed as a lecturer in botany at Stanford University, in the 1921-22 academic year. Another early collector was the renowned zoologist, Joseph Grinnell, who conducted systematic botanical and zoological surveys in the upper Santa Ana River Watershed in 1905; details of his accounts are published in *The Biota of the San Bernardino Mountains* (1908). Grinnell noted that the majority of his work was conducted in the upper reaches of the Santa Ana River and its tributaries because the region is an “exceptionally inviting one to the camper, as well as to the naturalist.” Phillip Munz and Ivan Johnston documented several significant plant occurrences in the study area in July of 1924, many of which have only been relocated for the first time over the course of the present study (CCH 2010). More recently Tim Krantz, Robert Thorne, and Andrew Sanders have made significant contributions to our understanding of botanical diversity in the range; these botanists maintain an unpublished checklist that has been a vital resource for this study. While much of the San Bernardino Mountains has been fairly well floristically documented (especially Bear Valley), there still exist areas that have seen little exploration or botanical documentation due to rugged terrain and limited access. The San Gorgonio Wilderness and Bighorn Mountain Wilderness to the south and northeast respectively are two such areas in the San Bernardino Mountains.

## **METHODS**

During the field effort, all accessible roads, trails, ridgelines, peaks, fuel breaks, slopes, and canyons within the study area were surveyed, and collections were made from all major physiographic features, geologic and edaphic substrates, and plant communities. General floristic surveys focused on assessing occurrences of special status and non-native plant taxa. Surveys for special status plants used a focused or intuitive field survey method, which targets habitats with the highest potential for locating target taxa at the appropriate time for proper identification (USFS 2005). Approximately 65 team days were spent in the field and more than 5,000 collections were made over the course of the study.

Herbarium specimens, literature, records from the California Department of Fish and Game Natural Diversity Data Base (CNDDDB 2010), and maps provided by SBNF (USFS 2010) were examined to identify historical occurrences of special status taxa within the study area. These sites were revisited, to confirm occurrences and compare current conditions with prior records. When special status taxa were encountered in the field (including new occurrences and confirmations of earlier reports) a USDA Forest Service Element Occurrence (EO) form was filled out with information regarding habitat and population attributes. Notes were taken at each collection site indicating the locality, latitude and longitude (via global positioning system receiver), elevation, substrate, aspect, percent slope, habitat, associated taxa, plant attributes (phenology, flower color, life form, etc.) and evidence of disturbance. Photos of plants and habitat were also taken. The EO data were entered into a geodatabase that links to spatial information in a Geographic Information Systems (GIS) format (shape files). The geodatabase with shapefiles, photographs, field forms, and a list of plant collections made over the course of the study were provided to SBNF as a part of reporting requirements for this project.

Most collections were made between April and September. All specimens collected during this project were examined and determined or verified by one or more of the authors. Determinations were made using several references, including Munz (1974), Hickman (ed., 1993), Baldwin et al. (2011), Flora of North America (2010), and reference specimens at the RSA-POM herbarium. Vouchers were deposited at RSA with duplicates distributed to UCR and elsewhere as available. Selected duplicates requested by SBNF staff were distributed to SBNF's Kukitkat herbarium at the Fawnskin Ranger Station. The specimen data were entered into the RSA database, from which labels were generated.

The Consortium of California Herbarium (CCH 2010) data were searched online in order to include historical specimens in the catalogue.

## **RESULTS AND DISCUSSION**

### **Vegetation**

We describe vegetation in the study area as an overview for the reader, and as context for the habitat associations of the flora (Appendix). The following summary of vegetation types within the study area is primarily based on the descriptions of statewide vegetation in (Barbour et al., eds., 2007), adopted to the more local scale based on our observations in the study area and vegetation descriptions for the San Bernardino Mountains by Minnich (1976), and Krantz

(1994). Photographs of representative vegetation types are shown in Figure 4.

**Chaparral.** Chaparral is an evergreen sclerophyllus shrubland that is characterized by densely branched shrubs, spaced closely together, forming a contiguous canopy (Keeley and Davis 2007). Herbaceous understory is sparse or lacking, except during a few years following wildfires (e.g., Minnich 1988; Keeley and Davis 2007). No recently-burned chaparral stands were found within the study area, though some fire-following taxa were located along roadsides and trailsides, or other open sites in chaparral. Dominant species in chaparral include *Adenostoma fasciculatum*, *Arctostaphylos glandulosa*, *A. pungens*, *Ceanothus integerrimus*, *C. leucodermis*, *C. perplexans*, *Cercocarpus betuloides*, *Eriogonum fasciculatum*, *Quercus berberidifolia*, *Q. wislizeni*, *Salvia apiana*, and *Hesperoyucca whipplei*. *Adenostoma fasciculatum* dominates chaparral on the south slopes at the lower elevations within the study area especially on exposed xeric sites such as south and west facing slopes and ridges. At higher elevations, or on slightly more mesic sites, *Quercus berberidifolia* or *Q. wislizenii* are the dominant shrubs, generally occurring with a similar assemblage of associated species (White and Sawyer 1995).

Special status taxa occurring in chaparral include: *Calochortus plummerae* is the only example of a special status taxon documented in chaparral during this study.

**Montane Chaparral.** Montane chaparral occurs at higher elevations than *Adenostoma* or *Quercus* dominated chaparral (above), and occurs as scattered to extensive thickets of dense brush or as an understory beneath conifers, and rarely exceeds 2m in height (Minnich 2007). Dominant shrubs in montane chaparral include *Arctostaphylos patula*, *Ceanothus cordulatus*, *Cercocarpus ledifolius*, *Amelanchier* spp., *Chrysolepis sempervirens*, *Ericameria* spp., and *Tetradymia canescens*. There are extensive stands of *Arctostaphylos patula* and *Ceanothus cordulatus* on the south-facing slopes below Grand View Point and Clark's Summit, along the northwestern margins of the study area. Smaller stands of various species assemblages are scattered within conifer forest throughout the study area.

Special status taxa that occur in the montane chaparral plant community include: *Acanthoscyphus parsihii* var. *cienezensis*, *Gilia leptantha* subsp. *leptantha*, *Hulsea vestita* subsp. *parryi*, and *Streptanthus campestris*.

**Montane Hardwood Forest and Woodland.** Oak dominated forests and woodlands occur on steep north facing slopes and raised stream beds above the Santa Ana River and Barton Flats. These stands are of varying composition and



Chamise chaparral with *Pinus coulteri* interspersed



Mixed coniferous forest dominated by *Calocedrus decurrens*



Slopes with *Pinus jeffreyi* forest

**Figure 4: Vegetation Types of the upper Santa Ana River Watershed**



Vernally wet understory adjacent to *Pinus jeffreyi* forest



Marsh wetland around Jenks Lake



Herbaceous understory of riparian forest

**Figure 4: Vegetation Types of the upper Santa Ana River Watershed**



structure and include dense stands dominated by *Quercus chrysolepis*, often with emergent *Pseudotsuga macrocarpa* (Allen-Diaz et al. 2007). Other associated tree species include *Acer macrophyllum*, *Calocedrus deccurens*, *Quercus kelloggii*, *Q. wislizenii*, *Pinus coulteri*. Other associated herbaceous species include *Bloomeria crocea*, *Erigeron divergens*, *Iris hartwegii* subsp. *australis*, *Keckiella ternata*, *Lithophragma affine*, *Malacothamnus fasciculatus*, *Muilla maritima*, and *Scutellaria siphocampyloides*.

Special status taxa of the evergreen forests and woodlands include: *Galium johnstonii* and *Sidalcea hickmannii* subsp. *parshii*.

**Riparian Forest and Shrubland.** Riparian forests and shrublands are found along perennial stream and river courses throughout the study area and are usually dominated by *Alnus rhombifolia*, *Populus trichocarpa*, and *Salix* spp. One of the few *Populus tremuloides* stands in southern California occurs just within the study area, at the Fish Creek Aspen Grove. These forests are usually limited to narrow bands immediately adjacent to stream channels. Common understory herbaceous species include: *Agrostis* spp., *Artemisia douglasiana*, *Barbarea orthoceras*, *Clematis ligusticifolia*, *Holcus lanatus*, *Mimulus guttatus*, *Ribes nevadense*, *Rosa californica*, *Rubus* spp., *Rumex* spp., and *Urtica dioica*.

Special status taxa occurring in the riparian forests and shrublands include: *Boykinia rotundifolia*, *Lilium humboldtii* subsp. *ocellatum*, and *L. parryi*.

**Pinyon Woodland.** Pinyon woodland covers wide areas of the north-facing San Bernardino Mountains, but it is uncommon within the study area. There are small stands of *Pinus monophylla* on arid slopes in the northern and eastern margins of the study area. Other associated species in pinyon woodland include *Artemisia tridentata*, *Castilleja angustifolia*, *Cercocarpus ledifolius*, *Chrysothamnus viscidiflorus*, *Echinocereus mojavensis*, *Ericameria nauseosa*, *Eriogonum umbellatum* var. *munzii*, *Gutierrezia* spp., and *Quercus chrysolepis*.

Special status taxa of the pinyon woodlands include: *Acanthoscyphus parishii* var. *cienezensis* and *Hulsea vesita* subsp. *parryi*.

**Montane Meadows.** The distribution of montane meadows is highly correlated with the existence of a shallow water table that provides high soil moisture content throughout the year. Montane meadows are characterized by dense cover of graminoid and herbaceous species and shrubs may or may not be present (Fites-Kaufman et al. 2007). *Salix* species may become established at sites that are flooded with some regularity and other trees species may encroach due the lowered soil

moisture (Fites-Kaufman et al. 2007). Within the study area, important meadows are found at Wildhorse Meadows, Sugarloaf Meadows, and along the margins of the San Geronio Wilderness, on Fish Creek and the South Fork of the Santa Ana River. Meadows comprise only a small proportion of the study area, but are floristically diverse. The flora of montane meadows within the study area is rich in species of *Carex*, *Juncus*, and *Poa*. Other species associated with montane meadows include: *Barbarea orthoceras*, *Castilleja miniata*, *Helenium bigelovii*, *Heracleum lanatum*, *Horkelia rydbergii*, *Hosackia oblongifolius*, *Lilium parryi*, *Mimulus moschatus*, *M. primuloides*, *Perideridia parishii*, *Potentilla* spp., *Salix* spp., *Solidago* spp., *Sisyrinchium* spp., *Sphenosciadium capitellatum*, and *Veratrum californicum*.

Special status taxa of the montane meadows include: *Arabis eschscholtziana*, *Botrychium crenulatum*, *Gentiana fremontii*, *Lilium parryi*, *Oxypolis occidentalis*, *Perideridia parishii* subsp. *parishii*, *Poa atropupurea*, *Sidalcea malviflora* subsp. *dolosa*, *Sisyrinchium longipes*, and *Taraxacum californicum*. *Symphyotrichum defoliatum* occurs at the western boundary of the study area in a drier low elevation meadow surrounded by chaparral.

**Marsh Wetland.** Marsh wetlands are scarce within the study area and are limited to edges of perennial streams, lakes and ponds. The dominant vegetation is comprised of *Carex* spp., *Juncus* spp., *Scirpus microcarpus*, and *Typha* spp. This habitat is often associated with several submersed and floating aquatic plants species including: *Azolla filiculoides*, *Ceratophyllum* spp., *Marsilea vestita*, *Lemna* spp., and *Potamogeton* spp.

There are no special status taxa that have been documented in marsh wetland.

**Pebble Plains.** The pebble plain flora is reminiscent of an alpine flora because it is primarily composed of low growing cushion plants, although it occurs at mid elevation (Derby 1979). Pebble plains are typically surrounded by pinyon pine, mixed coniferous forest, and *Pinus jeffreyi* forest, but are surrounded by subalpine forest on Sugarloaf Mountain. Characteristic taxa in the pebble plain include: *Boechera parishii*, *Bouteloua gracilis*, *Erigeron aphanactis* var. *congestus*, *Lewisia rediviva*, *Lomatium nevadense*, and *Selaginella* spp.

Special status plant taxa of the pebble plains include: *Eremogone ursina*, *Boechera parishii*, *Castilleja cinerea*, *Dudleya abramsii* subsp. *affinis*, *Eriogonum kennedyi* subsp. *austromontanum*, *Ivesia argyrocoma*, and *Phlox dolichantha*.

**Yellow Pine Forest.** The lower montane conifer forest within the study area is most often dominated by one of two yellow pines: *Pinus ponderosa* or *P. jeffreyi*, the latter being more common. *Pinus ponderosa* is the dominant pine in yellow pine forest in the vicinity of Barton Flats at ca. 1890-2012 m in elevation (6200-6600 ft), while *P. jeffreyi* becomes the dominant yellow pine at higher elevations, away from the deep alluvial substrates, in the study area, typically between 2042-2590 m (6600-8500 ft) in elevation. Associated with *Pinus ponderosa* forest at lower elevations are *Abies concolor*, *Calocedrus decurrens*, *Quercus chrysolepis*, and *Q. kelloggii*. *Pinus jeffreyi* forest is the most extensive montane coniferous forest in the study area and is frequently associated with *Abies concolor*, *Arctostaphylos patula*, *Catilleja applegatei* ssp. *martini*, *Elymus elymoides*, *Eriogonum* spp., *Galium angustifolium*, *Gayophytum diffusum*, *Juniperus grandis*, *Leptosiphon breviculus*, *Lotus nevadensis*, *Penstemon* spp, and *Pinus lambertiana*.

Special status taxa of the yellow pine forest include: *Acanthoscyphus parishii* var. *cienezensis*, *Antennaria marginata*, *Astragalus bicristatus*, *Astragalus lentiginosus* var. *sierrae*, *Draba corrugata* var. *corrugata*, *Erigeron breweri* var. *jacinteus*, *Gilia leptantha* subsp. *leptantha*, *Horkelia wilderae*, *Hulsea vesita* subsp. *parryi*, *Mimulus exiguus*, *Packera bernardina*, *Packera ionophylla*, *Polypodium hesperium* and *Rupertia rigida*.

The following special status taxa also occur in yellow pine forest but are restricted to carbonate substrates: *Abronia nana* subsp. *covillei*, *Eriogonum microthecum* var. *corymbosoides*, and *Physaria kingii* subsp. *bernardina*.

**Mixed Conifer Forest.** *Abies concolor*, *Calocedrus decurrens*, *Pinus lambertiana* are regular components of the yellow pine forest, but also form a community of their own, on mesic steep north and east facing slopes (Minnich 2007b). This forest type is found at higher elevations than the montane hardwood forest and woodlands (described above) and generally lacks *Quercus* species. Shrubs frequently found in mixed conifer forest include *Ribes nevadense*, *R. roezlii*, *Salix* spp., and *Sambucus caerulea*. Other associated species include: *Catilleja applegatei* ssp. *martini*, *Eriophyllum confertiflorum*, *Lotus nevadensis*, *Penstemon grinnellii*, and *P. labrosus*.

Special status taxa occurring in the mixed conifer forest include: *Acanthoscyphus parishii* var. *cienezensis*, *Actaea rubra*, *Astragalus bicristatus*, *Astragalus lentiginosus* var. *sierrae*, *Erigeron breweri* var. *jacinteus*, *Gilia leptantha* subsp. *leptantha*, *Heuchera parishii*, *Horkelia wilderae*, *Hulsea vesita* subsp. *parryi*, and *Packera ionophylla*.

The following species status taxa also occur in mixed coniferous forest but are restricted to carbonate substrates: *Abronia nana* subsp. *covillei*, *Eriogonum microthecum* var. *corymbosoides*, and *Physaria kingii* subsp. *bernardina*.

**Subalpine Conifer Forest.** The higher elevations within the study area are dominated by two pine species that are characteristic of subalpine habitats; these are *Pinus contorta* subsp. *murrayana* (lodgepole pine) and *P. flexilis* (limber pine; Minnich 2007b). These two species are sometimes intermixed with *Abies concolor* and *Pinus jeffreyi*. Other associated species of the subalpine conifer forest are: *Antennaria rosea*, *Chrysolepis sempervirens*, *Draba corrugata* var. *corrugata*, *Eriogonum wrightii* var. *subscaposum*, *Heuchera parishii*, *Holodiscus microphyllus*, *Penstemon caesius*, and *Silene parishii*.

Special status taxa occurring primarily in the subalpine conifer forest include: *Boechea platysperma*, *Draba corrugata* var. *corrugata*, *Dryopteris filix-mas*, *Heuchera parshii*, *Hulsea vestita* var. *parryi*, *Packera ionophylla*, and *Sedum niveum*.

**Subalpine Fields and Wind Swept Talus Ridges.** The Transverse Ranges are geologically young mountain ranges, and their many precipitous slopes and ridges have not yet eroded to more gentle landforms. When these slopes are covered with scree or talus a sparse yet characteristic plant assemblage forms (Sawyer and Keeler-Wolf 2007). These habitats generally lack an overstory and are often composed of geophytes and herbaceous perennial plant species. Common taxa that are present in subalpine fields and wind swept talus ridges include: *Eriogonum kennedeyi* var. *alpigenum*, *Eriogonum wrightii* var. *subscaposum*, *Hulsea vestita* var. *parryi*, *Lomatium nevadense*, *Oreonana vestita*, and *Oxytropis oreophila* var. *oreophila*.

Special status taxa occurring primarily in the subalpine fields and wind swept talus ridges include: *Draba corrugata* var. *corrugata*, *Eriogonum kennedeyi* var. *alpigenum*, *Heuchera parishii*, *Hulsea vestita* var. *parryi*, *Oreonana vestita*, *Oxytropis oreophila* var. *oreophila*, and *Podistera nevadensis*.

## Flora

The study area is diverse, with 755 vascular plant taxa reported here (Table 2). The study area accounts for approximately 5% of the total area of the San Bernardino Mountains; however, the number of taxa documented in this study is approximately half of the total documented for the entire range (Krantz et al. 2005). The wealth of plant diversity found in the study area can be explained, in

part, by the diversity of habitats present. The study area contains three habitats or edaphic substrates that support a high percentage of endemic diversity: carbonate soils, pebble plains, and montane meadows (Fig. 5). In addition, the study area intersects several transition zones and contains floristic elements of both the California Floristic Province and Mojave Desert Floristic Province. A numerical summary of the floristic diversity in the study area is presented in Tables 2 and 3.

Half of the taxa present in the study area are perennial herbs; this is likely due to the high levels of diversity in the montane meadow habitat which is dominated by plants of this habit (Table 3). A complete annotated catalogue of the flora is provided in the Appendix.

**Table 2:** A floristic summary of the upper Santa Ana River Watershed. Percentage of the total number of taxa are given in parentheses.

SARW flora	Ferns and Fern Allies	Gymnosperms	Dicots	Monocots	Total
Families	11	3	64	16	<b>94</b>
Genera	15	8	258	58	<b>339</b>
Non-native taxa	0	2	54	23	<b>81</b> (10%)
Special status taxa	3	0	48	7	<b>58</b> (7.7 %)
Total number of taxa	21 (3%)	14 (2%)	546 (72%)	174 (23 %)	<b>755</b>

### Noteworthy Collections

We report three taxa newly documented for the San Bernardino Mountains; two of these are newly documented for San Bernardino County. *Senecio scorzonella* is new record for the county and the San Bernardino Mountains. It occurs in California and Nevada (FNA 2010). In California, it is from the Sierra Nevada–Cascade uplift and the White Mountains, with the nearest record on the Kern Plateau in Tulare County (CCH 2010). This occurrence extends its range 322 km (200 mi) to the south. *Humulus lupulus* var. *lupulus* (common hop) is also a new record for the county and the range. This taxon is native to Europe and is well known as an ingredient in beer. The two documented occurrences within the study area were in riparian habitats near current or historic human settlements, and may have escaped from local cultivation. In addition, *Cardaria chalepensis* is an



Carbonate soils in montane chaparral



Pebble plain habitat within subalpine forest on Sugarloaf Mountain



Montane meadow with clay soils surrounded by *Salix*

**Figure 5:** Special habitats that support a high percentage of endemic diversity

**Table 3.** Numerical summary of taxa, including the ten largest families.

	<i>Number of Taxa</i>	<i>% of total flora</i>
<b>Ten largest families</b>		
Asteraceae	94	12.3%
Poaceae	89	11.6%
Fabaceae	40	5.2%
Cyperaceae	37	4.8%
Brassicaceae	31	4.1%
Boraginaceae	29	3.8%
Rosaceae	28	3.7%
Polemoniaceae	24	3.1%
Polygonaceae	24	3.1%
Onagraceae	18	2.4%
<b>Ten largest genera</b>		
<i>Carex</i>	24	3.1%
<i>Mimulus</i>	16	2.1%
<i>Juncus</i>	15	2.0%
<i>Eriogonum</i>	13	1.7%
<i>Bromus</i>	12	1.6%
<i>Elymus</i>	10	1.3%
<i>Lupinus</i>	10	1.3%
<i>Phacelia</i>	10	1.3%
<i>Poa</i>	10	1.3%
<i>Stipa</i>	10	1.3%
<b>Lifeforms</b>		
Perennial herb	384	50.3%
Annual	187	24.5%
Small shrub	38	5.0%
Large shrub	38	5.0%
Geophyte	35	4.6%
Tree	30	3.9%
Suffruticose perennial	27	3.5%
Biennial herb	14	1.8%
Parasitic perennial	13	1.7%
Aquatic	10	1.3%
Succulent	10	1.3%
Liana	3	0.04%

invasive noxious weed, native to east Asia, that has spread rapidly through western North America, and, previously known regionally from the lower elevation habitats in San Bernardino County near Chino, but was newly documented for the San Bernardino Mountains during this study.

### **Special Status Taxa Including Conservation Recommendations for Select Taxa**

Fifty-seven taxa of conservation concern (i.e., special status taxa) were documented within the study area (Table 4, Fig. 6). Special status plants are defined here to include: taxa listed in the CNPS Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2011), Forest Service Region 5 sensitive and watch plant taxa on the SBNF, and taxa on the draft watch list for the SBNF (USFS 2007b, 2009). Several element occurrences (EOs) of special status taxa were newly documented, especially in the vicinity of Heart Bar Campground, Coon Creek, and Heart Bar Peak, where few special status plant EOs had been mapped previously (USFS 2007). An EO is a location record that contains an individual population or a stand of a special status taxon. Populations, individuals, or colonies located within 1/4 mi of each other are generally considered a single EO (CDFG 2007). Special status taxa that were frequently encountered within the study area include: *Gilia leptantha* subsp. *leptantha*, *Heuchera parishii*, *Hulsea vestita* subsp. *parryi*, and *Packera ionophylla*. *Gilia leptantha* subsp. *leptantha* was encountered frequently and was also locally abundant when found. However, because this taxon is globally rare and endemic to the study area, it is our assessment that this taxon is appropriately ranked as Forest Service Sensitive and CRPR 1B.3 (CRPR codes defined in Table 4). *Hulsea vestita* subsp. *parryi* was encountered commonly on open slopes, ridgelines, and dry washes; however, populations were often quite small and scattered. Similarly, *Heuchera parishii* and *Packera ionophylla* were frequently encountered on dry rocky slopes, but occurrences were typically of few individuals (usually fewer than 20 plants).

In contrast to the above mentioned taxa, *Sidalcea hickmanii* subsp. *parishii* was encountered only once over the course of the study. Although there are several historic occurrences for *S. h.* subsp. *parishii* in the upper Santa Ana River watershed, only one individual was located during this study. Within the study area, this taxon is historically known from Barton Flats, Forsee Creek, the Santa Ana River Trail, and the type locality at Seven Oaks (Robinson 1897). *Sidalcea hickmanii* subsp. *parishii* is presumed to be a fire follower, and its seeds may require exposure to fire-related germination cues for germination (CNPS 2010).



**Table 4:** Summary of special status taxa documented in the study area.

<i>Family</i>	<i>Taxon</i>	<i>Status</i>		
Apiaceae	<i>Oreonana vestita</i>	<b>S</b>	1B.3	1
Apiaceae	<i>Oxypolis occidentalis</i>	<b>PW</b>		1
Apiaceae	<i>Perideridia parishii</i> subsp. <i>parishii</i>	<b>W</b>	2.2	2(2)
Apiaceae	<i>Podistera nevadensis</i>	<b>W</b>	4.3	1
Asteraceae	<i>Antennaria marginata</i>	<b>W</b>	2.3	1
Asteraceae	<i>Erigeron breweri</i> var. <i>jacinteus</i>	<b>W</b>	4.3	3
Asteraceae	<i>Hulsea vestita</i> subsp. <i>parryi</i>	<b>W</b>	4.3	36
Asteraceae	<i>Packera bernardina</i>	<b>S</b>	1B.2	1
Asteraceae	<i>Packera ionophylla</i>	<b>W</b>	4.3	30
Asteraceae	<i>Symphotrichum defoliatum</i>	<b>S</b>	1B.2	1
Asteraceae	<i>Taraxacum californicum</i>	<b>FE</b>	1B.1	5(1)
Brassicaceae	<i>Arabis eschscholtziana</i>	<b>PW</b>		5
Brassicaceae	<i>Boechera parishii</i>	<b>S</b>	1B.2	6
Brassicaceae	<i>Boechera platysperma</i>	<b>PW</b>		1
Brassicaceae	<i>Draba corrugata</i> var. <i>corrugata</i>	<b>PW</b>		14
Brassicaceae	<i>Physaria kingii</i> subsp. <i>bernardina</i>	<b>FE</b>	1B.1	2
Brassicaceae	<i>Streptanthus campestris</i>	<b>S</b>	1B.3	1
Caryophyllaceae	<i>Arenaria lanuginosa</i> subsp. <i>saxosa</i>	<b>S</b>	2.3	5
Caryophyllaceae	<i>Eremogone ursina</i>	<b>FT</b>	1B.2	3
Crassulaceae	<i>Dudleya abramsii</i> subsp. <i>affinis</i>	<b>S</b>	1B.2	4
Crassulaceae	<i>Sedum niveum</i>	<b>S</b>	4.2	3
Cyperaceae	<i>Carex occidentalis</i>	<b>PW</b>	2.3	1
Dryopteridaceae	<i>Dryopteris filix-mas</i>	<b>PW</b>	2.3	9
Ericaceae	<i>Arctostaphylos parryana</i> subsp. <i>tumescens</i>		4.3	3
Fabaceae	<i>Astragalus bicristatus</i>	<b>S</b>	4.3	22
Fabaceae	<i>Astragalus lentiginosus</i> var. <i>sierrae</i>	<b>S</b>	1B.2	6
Fabaceae	<i>Astragalus leucolobus</i>		1B.2	1
Fabaceae	<i>Oxytropis oreophila</i> var. <i>oreophila</i>	<b>W</b>	2.3	4
Fabaceae	<i>Rupertia rigida</i>	<b>W</b>	4.3	1
Gentianaceae	<i>Gentiana fremontii</i>	<b>S</b>	2.3	1
Iridaceae	<i>Sisyrinchium longipes</i>	<b>PW</b>	2.2	1
Liliaceae	<i>Calochortus plummerae</i>	<b>S</b>	1B.2	1
Liliaceae	<i>Lilium humboldtii</i> subsp. <i>ocellatum</i>	<b>W</b>	4.2	14
Liliaceae	<i>Lilium parryi</i>	<b>S</b>	1B.2	5
Malvaceae	<i>Sidalcea hickmanii</i> subsp. <i>parishii</i>	<b>S</b>	1B.2	6
Malvaceae	<i>Sidalcea malviflora</i> subsp. <i>dolosa</i>	<b>PW</b>		1
Nyctaginaceae	<i>Abronia nana</i> subsp. <i>covillei</i>	<b>S</b>	4.2	3

Ophioglossaceae	<i>Botrychium crenulatum</i>	<b>S</b>	2.2	<b>9</b>
Orobanchaceae	<i>Castilleja cinerea</i>	<b>FT</b>	1B.2	<b>5</b>
Orobanchaceae	<i>Castilleja montigena</i>	<b>W</b>	4.3	<b>3</b>
Phrymaceae	<i>Mimulus exiguus</i>	<b>S</b>	1B.2	<b>1</b>
Poaceae	<i>Poa atropurpurea</i>	<b>FE</b>	1B.1	<b>20</b>
Poaceae	<i>Sphenopholis obtusata</i>		2.2	<b>1</b>
Polemoniaceae	<i>Gilia leptantha</i> subsp. <i>leptantha</i>	<b>S</b>	1B.3	<b>3</b>
Polemoniaceae	<i>Phlox dolichantha</i>	<b>S</b>	1B.2	<b>22</b>
Polygonaceae	<i>Acanthoscyphus parishii</i> var. <i>cienegensis</i>	<b>S</b>	1B.3	<b>1</b>
Polygonaceae	<i>Acanthoscyphus parishii</i> var. <i>parishii</i>	<b>PW</b>		<b>1</b>
Polygonaceae	<i>Eriogonum kennedyi</i> var. <i>alpigenum</i>	<b>S</b>	1B.3	<b>1</b>
Polygonaceae	<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	<b>FT</b>	1B.2	<b>1</b>
Polygonaceae	<i>Eriogonum microthecum</i> var. <i>corymbosoides</i>	<b>W</b>		<b>1</b>
Polypodiaceae	<i>Polypodium hesperium</i>	<b>PW</b>		<b>3</b>
Ranunculaceae	<i>Actea rubra</i>	<b>PW</b>		<b>14</b>
Rosaceae	<i>Horkelia wilderae</i>	<b>S</b>	1B.1	<b>1</b>
Rosaceae	<i>Ivesia argyrocoma</i>	<b>S</b>	1B.2	<b>1</b>
Rubiaceae	<i>Galium johnstonii</i>	<b>W</b>	4.3	<b>8</b>
Saxifragaceae	<i>Boykinia rotundifolia</i>	<b>W</b>		<b>20</b>
Saxifragaceae	<i>Heuchera parishii</i>	<b>S</b>	1B.3	<b>31</b>

**FE** = Federally Endangered

**FT** = Federally Threatened

**S** = Forest Service Sensitive

**W** = Forest Service Watchlist

**PW** = Forest Service Proposed Watchlist (USFS 2007)

CRPR Rankings:

1B = plants rare, threatened, or endangered in California and elsewhere

2 = plants rare, threatened, or endangered in California, but more common elsewhere

4 = Plants of limited distribution a watchlist

CRPR Threat Ranks:

0.1 = seriously threatened in California

0.2 = fairly threatened in California

0.3 = not very threatened in California (CNPS 2010)

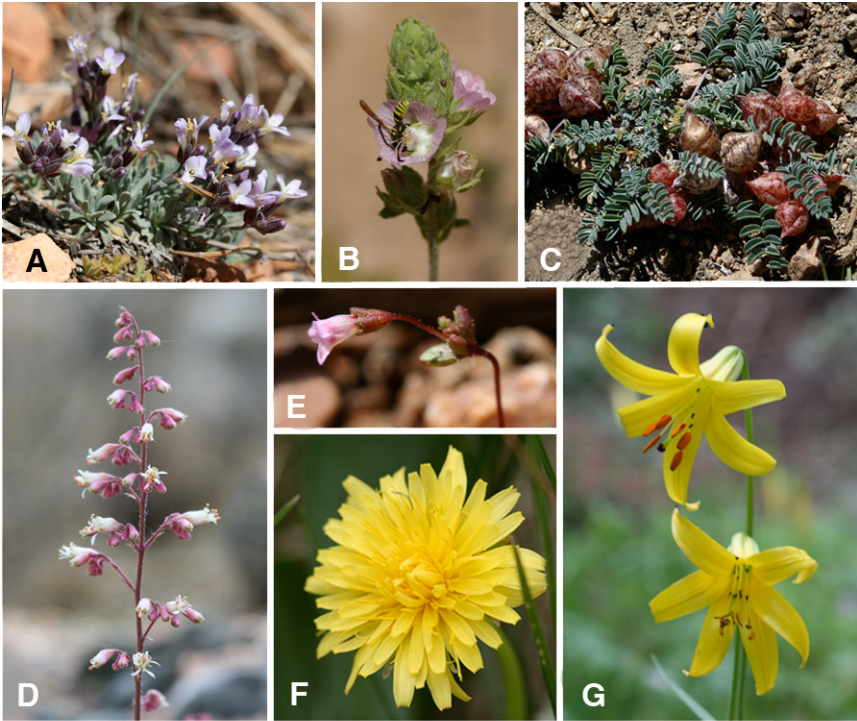
**BOLD numbers** indicate number of EXTANT occurrences.

(Numbers in parenthesis) indicate occurrences that are presumed EXTIRPATED, based on field observations and the CNDDDB (2010).

The current rarity of this taxon within the study area may be due to the absence of wildfires in recent decades. The one individual of *S. h.* subsp. *parishii* that was documented in the study area was growing along the Santa Ana River Trail, in a disturbed trailside area. It is common for fire-following taxa to germinate in response to roadside and trailside disturbance, even without fire-related germination cues.

Special status taxa that were not relocated as a result of this study include *Dryopteris filix-mas*, *Podistera nevadensis*, and *Sphenopholis obtusata*. These species have historically occurred in the upper Santa Ana River watershed, two were last documented more than 100 years ago and one over 60 years ago. *Dryopteris filix-mas* was last documented in 1882 by Parish in Holcomb Canyon; this collection is presumed to have been from Wildhorse Canyon within the study area and not Holcomb Valley to the north, based on the elevation that was provided on the specimen label and the fact that Wildhorse Canyon was historically called Holcomb Canyon at the time of Parish's collection. *Dryopteris filix-mas* was extensively and intensively searched for over the course of the study, but we were unable to relocate this historic occurrence. *Podistera nevadensis* was last documented on the summit of Sugarloaf Mountain in 1906 by Grinnell. Over the course of the study extensive surveys were conducted on Sugarloaf Mountain; however our efforts failed to relocate this historic occurrence. *Sphenopholis obtusata* was last documented in 1947 by Munz at South Fork public camp. This species is superficially similar to *Agrostis exarata* and while *A. exarata* was found to be relatively common in the vicinity of South Fork camp, we were unable to locate *Sphenopholis obtusata*. Suitable habitat is present for all three of these taxa at these locations; therefore these occurrences are suspected to still be extant.

Five special status taxa were documented for the first time south of Sugarloaf Mountain. These are *Abronia nana* var. *covillei*, *Boechera shockleyi* hybrid, *Dudleya abramsii* subsp. *affinis*, *Physaria kingii* subsp. *bernardina*, and *Mimulus exiguus*. While these do not constitute significant range extensions, documentation of these occurrences are noteworthy for their contributions to our understanding of their distributions within the San Bernardino Mountains. *Abronia nana* var. *covillei*, *Boechera shockleyi* hybrid, and *Physaria kingii* subsp. *bernardina* are endemic to carbonate substrates, and we documented them for the first time in the isolated carbonate outcrops in the vicinity of Coon Creek. *Boechera shockleyi* hybrid is morphologically distinct and is identified here for the first time. The parentage of this taxon (*B. shockleyi* x *B. gracilipes* x *B. thompsonii*) was identified based upon microsatellite sequence data (M.D. Windham, personal communication, Jan. 6, 2013). This is a stable and presumed ancient triploid hybrid (*B. shockleyi* is the only parent known to occur in the San Bernardino



**Figure 6:** Select special status species occurring in the study area.

**A:** *Boechera parishii*

**B:** *Sidalcea hickmanii* subsp. *parishii*

**C:** *Astragalus lentiginosus* var. *sierrae*

**D:** *Heuchera parishii*

**E:** *Mimulus exiguus*

**F:** *Taraxicum californicum*

**G:** *Lilium parryi*

Mountains and California) that warrants further investigation and taxonomic recognition. These carbonate outcrops warrant additional surveys as they may yield even more significant finds.

Several other special status taxa that have not been documented in the study area, but have potential to occur there because localized microhabitats appear to be suitable, and the study area is only a short distance from known occurrences. Specific examples include the special status taxa that frequently co-occur in

seasonally wet sites, with *Mimulus exiguus* (e.g. *Castilleja lasiorhyncha*, *Mimulus purpureus*, *Navarretia peninsularis*, and *Phacelia exilis*).

*Taraxacum californium* is federally listed as endangered and was historically known from five locations within the study area, at Big Meadows, Heart Bar Peak, Mission Spring Meadow, Seven Oaks, and Wildhorse Meadows. The occurrence at Seven Oaks has not been relocated and has probably been extirpated by habitat modification. The occurrences at Big Meadow and Mission Springs Meadow are of small size with only 8 and 20 individuals documented at these occurrences respectively, and co-occur with the non-native *Taraxacum officinale*; however, plants do not appear highly introgressed at these two occurrences. The occurrence at Wildhorse Meadows is the largest within the study area, however plants at this location co-occur with *Taraxacum officinale* and appear to be highly affected by introgressive hybridization. However observations of hybridization are not conclusive and require further study.

*Bromus vulgaris* is known primarily from the Sierra Nevada and Coast ranges in California, but also occurs in the Rocky Mountains, in the US and Canada (Hickman 1993). There is one historic occurrence of this species in the study area that was documented by Munz in 1947. This species has not been relocated in the study area. We recommend adding this species to the SBNF Watch plants due to its limited distribution in southern California and the one historic occurrence in the San Bernardino Mountains.

### Near Endemic Taxa

Three special status taxa are nearly endemic to the study area: *Acanthoscyphus parishii* var. *cienezensis*, *Gilia leptantha* subsp. *leptantha*, and *Horkelia wilderae*. *Acanthoscyphus parishii* var. *cienezensis* occurs on sandy flats and slopes and occasionally on limestone in montane chaparral, mixed coniferous forest, and yellow pine forest habitats. This taxon is nearly endemic to the study area with the exception of plants that occur to the northeast in the Mission Creek Watershed and plants that have intermediate morphology between *Acanthoscyphus parishii* var. *cienezensis*, and *A. p.* var. *goodmaniana* in the Arrastre Creek Watershed. These intermediate populations are found where the ranges of these two taxa overlap, near Arrastre Creek, Rattlesnake Creek, and Tip Top Mountain, on carbonate and other substrates. *Acanthoscyphus parishii* var. *goodmaniana* occurs on the north slope of the San Bernardino Mountains and is endemic to carbonate substrates. The CNDDDB currently has three Element Occurrences (EOs) assigned for *A. p.* var. *cienezensis*, We have documented at least 22 additional occurrences within the study area (Table 4).

*Gilia leptantha* subsp. *leptantha* (fine-flower gilia) is endemic to the San Bernardino Mountains. It is found throughout the study area, but it is especially frequent in the vicinity of Heart Bar and Coon Creek in yellow pine and mixed coniferous forest. It has also been documented on dry sandy benches above the Santa Ana River in mixed oak woodland and at the edges of riparian forest. *Gilia leptantha* subsp. *leptantha* is endemic to the Santa Ana River watershed, except for two historic specimens, reported just outside of the study area. One historic location, based on a specimen reported from Mill Creek Canyon (POM262527), was not relocated during survey efforts in 2003 by botanists from Rancho Santa Ana Botanic Garden. The second extralimital location is based on a specimen reported from Oak Glen Canyon in 1931 (RSA 469348). These two historic extralimital locations may have been waifs or mislabeled locations.

*Horkelia wilderae* (Barton Flats horkelia) is primarily distributed in the vicinity of Barton Flats, where it is found on dry open flat areas in yellow pine forest. It is known from at least two occurrences just south of the study area, in the San Gorgonio Wilderness, but is endemic to the Upper Santa Ana watershed proper. The CNDDDB reports six *H. wilderae* occurrences throughout its range. During this study we have documented at least 14 occurrences within the study area (Table 3).

### Non-native Taxa

Eighty-one non-native taxa have been documented in the study area, accounting for only 10% of the total vascular plant diversity. By comparison, this is less than the total percentage of non-natives for the range as a whole (14%) and for the State of California (17%) (Hickman et al.1993; [Krantz 1994](#)). Two non-native taxa were newly documented for the range as a result of this study, *Cardaria chalepensis* and *Humulus lupulus* var. *lupulus*. *Cardaria chalepensis* is known from one occurrence within the study area, near Converse Flats near the heliport station. *Humulus lupulus* var. *lupulus* was documented at two locations: in the vicinity of Seven Oaks and Heart Bar Creek. *Rubus armeniacus* has not been extensively documented in the study area, but is known from the vicinity of Clarks Ranch. This species was previously documented at lower elevations in the Santa Ana Watershed outside of the study area (e.g. Oak Glen), but has potential to expand its range further into the study area.

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## ANNOTATED CATALOG OF THE VASCULAR FLORA

The following is a list of all vascular plant taxa documented from the upper Santa Ana River watershed study area (Fig. 1). This catalog reports the results of field work and herbarium searches as of September 2010. Family classification follows APG (2010). Nomenclature and classification of genera and species conforms to either *The Jepson Manual: Higher Plants of California Second Edition* (online) (2011) with the exception of selected treatments in *Flora of North America* (2010). Common names are presented and follow and were compiled from a variety of sources including the USDA plants database, FNA (2010), and *The Jepson Manual: Higher Plants of California Second Edition* (2012). Voucher specimens cited in the catalogue are housed at RSA unless designated UC or UCR. The authors' subjective evaluations of abundance of each taxon throughout the study area are indicated as "abundant," "common," "locally common," "occasional," "uncommon," and "rare."

Non-native taxa are denoted by an asterisk (\*).

Special status taxa are denoted by a dagger (†).

## FERNS AND FERN ALLIES

### SELAGINELLACEAE

*Selaginella asprella* Maxon, bluish spike-moss, Perennial herb. Occasional on dry rocky slopes and cliff faces in forest. 6600-9900 ft. Hathaway Flat, Cienega Seca Creek, vicinity of Mission Springs Campground and Sugarloaf Mountain. *Gross 4069*.

*Selaginella bigelovii* Underw., bushy spikemoss, Perennial herb. Occasional in openings of chaparral. 5400 ft. *Henrickson 19998*.

*Selaginella watsonii* L. Underw., alpine spike-moss, Perennial herb. Occasional on rocky slopes, cliffs and rock crevices in forest and alpine areas. 6200-9950 ft. Jenks Lake Road, Wildhorse Creek, Lightning Gulch, Cienega Seca Creek, canyon above Big Meadow, Fish Creek, Coon Creek, Sugarloaf Mountain. *White 12481*.

### EQUISETACEAE

*Equisetum arvense* L., common horsetail, Perennial herb. Occasional in wet areas, meadows and stream and river edges. 5500-7500 ft. Staircase Canyon, vicinity of Burro Flats, Barton Flats, Jenks Lake, Barton Creek, vicinity of

Poopout Hill, South Fork, Lost Creek, Fish Creek. Cones mature in spring. *Gross* 3485.

***Equisetum hyemale*** L. subsp. ***affine*** (Engelm.) Calder & Roy L. Taylor, common scouring rush, Perennial herb. Occasional in wet areas, meadows and stream and river edges. 5500-8500 ft. Staircase Canyon, vicinity of Jenks Lake, Frog Creek, Lost Creek, Mission Creek. *Mistretta* 3495.

***Equisetum laevigatum*** A. Braun, smooth scouring rush, Perennial herb. Occasional in moist areas, meadows and stream and river edges, dry stream beds, and forest floors. 5000-8000 ft. Seven Oaks, Barton Flats, South Fork, Wildhorse Trail, Heart Bar, Fish Creek, Coon Creek, Cienega Seca Creek. *White* 13231.

## ASPLENIACEAE

***Woodsia oregana*** D. Eaton subsp. ***cathcartiana*** (B. L. Robinson) Windham, Oregon cliff fern, Perennial herb. Uncommon on cliffs and rocky slopes. 7600-9600 ft. Foresee Creek, Cienega Seca, and Sugarloaf Summit. *Bell* 1653. AZOLLACEAE

***Azolla filiculoides*** Lam., Pacific mosquitofern, Aquatic annual or perennial herb. Uncommon in ponds and slow streams. 4900 ft. Clarks Ranch. *Sanders* 15698. BLECHNACEAE

***Woodwardia fimbriata*** Smith, giant chain fern, Perennial herb. Scarce at roadside seep. 4900 ft. Clarks Ranch. *Wood* 2656.

## DENNSTAEDTIACEAE

***Pteridium aquilinum*** (L.) Kuhn var. ***pubescens*** Underw., western bracken, Perennial herb. Common in shaded wooded areas. 6800-7700 ft. Vicinity of Bellyache Springs, Barton Flats, Creek, Horse Meadows, Sugarloaf Meadow, Wildhorse Canyon Trail. *Gross* 4179.

## DRYOPTERIDACEAE

***Athyrium filix-femina*** (L.) Roth, lady fern, Perennial herb. Occasional in shaded riparian areas and meadows 5000-8000 ft. Pinezanita, Barton Flats, Lost Creek, South Fork, Fish Creek. Highly variable, infrespecific classification needs further study; var. *cyclosorum*, and var. *californicum* have both been recognized in the study area. *Fraga* 2400.

***Cystopteris fragilis*** (L.) Bernh., brittle fern, fragile fern, Perennial herb. Uncommon in shady areas, among rocks, meadows, streamside. 6300-8500 ft. South Fork Campground, Barton Flats, Foresee Creek Trail, Poopout Hill, South Fork, Mission Creek. *Gross* 3989.

*Dryopteris arguta* (Kaulf.) Maxon, marginal wood fern, Perennial herb. Rare on shaded dry wooded slopes. 5200 ft. Santa Ana River Trail near Round Cienega Creek. *Fraga 3051*.

†*Dryopteris filix-mas* (L.) Schott, male fern, Perennial herb. Rare in shaded crevices and rocks. 8000 ft Holcomb Valley [possibly Wildhorse Canyon]. Historic collection, not seen or collected in recent years. Last documented in 1882. *Parish 1513*.

*Polystichum imbricans* (D. Eaton) D. H. Wagner subsp. *curtum* (Ewan) D. H. Wagner, imbricate sword fern, Perennial herb. Occasional on dry shaded slopes, rock crevices. 5000-6200 ft. Barton Flats, Santa Ana River Trail near Round Cienega Creek, Pinezanita. *Fraga 2798*.

## MARSILEACEAE

*Marsilea vestita* Hook. & Grev., hairy waterclover, Perennial herb. Rare at margins of shallow pools of water. 5000-6500 ft. Vicinity of Barton Flats on Boy Scout Property. *Wood 2441*.

## OPHIOGLOSSACEAE

†*Botrychium crenulatum* W. H. Wagner, scalloped moonwort, Perennial herb. Rare occurring on saturated substrates near seeps and stream margins usually in meadows. 6900-7400 ft. South Fork, near Coon Creek, and Lost Creek. *Gross 4212*.

## POLYPODIACEAE

†*Polypodium hesperium* Maxon, western polypody, Perennial herb. Rare in rock crevices, talus slopes, or under rock ledges. 6500-7700 ft. Fish Creek, North Fork of Mission Creek. *O'Brien 60*.

## PTERIDACEAE

*Cheilanthes covillei* Maxon, Coville's lipfern, Perennial herb. Uncommon in rock crevices and slopes. 4800-8100 ft. Near Cienega Seca. *Wood 936*.

*Pellaea mucronata* (D. C. Eaton) D. C. Eaton var. *californica* (Lemmon) Munz & I.M. Johnst., California cliffbrake, Perennial herb. Uncommon rocky slopes in or near rock crevices. 5000-8500 ft. Vicinity of Barton Flats, Hathaway Flat, Big Meadows, Cienega Seca Creek, Fish Creek, South Fork. *Mistretta 4039*.

*Pellaea mucronata* (D. C. Eaton) D. C. Eaton var. *mucronata*, birdfoot cliffbrake, Perennial herb. Uncommon on rocky slopes in or near rock crevices. 5500-

8000 ft. Filaree Flat, Angelus Oaks, Rattlesnake Creek, Cienaga Seca Creek, Lost Creek, Fish Creek Meadows, vicinity of Heart Bar, Sugarloaf Mountain. *White 13271.*

## CONIFERAE

### CUPRESSACEAE

*Calocedrus decurrens* (Torr.) Florin, incense cedar, Tree. Occasional in mixed pine and oak woodland. 5000-7000 ft. Vicinity of Seven Oaks, Barton Flats, South Fork Campground, Lost Creek. *Mistretta 4051.*

\* *Hesperocyparis arizonica* (Greene) Bartel, Arizona cypress, Tree. Uncommon in groomed/cut back oak woodland and chaparral transition areas often with other cultivated/introduced trees. 5500 ft. Persisting from cultivation at Flats. [*Cupressus arizonica* Greene (Abrams) A.E. Murray]. *Mistretta 3539.*

*Juniperus grandis* R.P. Adams, western juniper, Tree. Occasional in mixed forests. 5300-9000 ft. Common in mixed forest. *Fraga 2701.*

\* *Sequoiadendron giganteum* (Lindley) Buchholz, giant sequoia, Tree. Localized and rare in mixed pine forests. 6000-7000 ft. Vicinity of Seven Oaks, Jenks Lake, and South Fork Trailhead. Planted and persisting, reaching reproductive maturity, however not currently observed naturalizing. *Mistretta 3768.*

### EPHEDRACEAE

*Ephedra viridis* Coville, mormon tea, Small shrub. Uncommon in sagebrush scrub and open yellow pine forest. 5600-8000 ft. Vicinity of Barton Flats, and Seven Oaks and Heart Bar. *Mistretta 3670.*

### PINACEAE

*Abies concolor* (Gordon & Glend.) Lindley, white fir, Tree. Common and often dominant tree in mixed forest. 5200-9100 ft. *Fraga 2660.*

*Pinus contorta* Loudon subsp. *murrayana* (Grev. & Balf.) Critchf., lodgepole pine, Tree. Occasional to common in subalpine forest. 7000-9900 ft. Frog Creek, South Fork and east ridgeline of Sugarloaf Mountain. *Mistretta 4142.*

*Pinus coulteri* D. Don, Coulter pine, Tree. Uncommon in chaparral transition zones and lower mixed coniferous forest. 5100-7000 ft. Vicinity of Seven Oaks. *Fraga 2515*

*Pinus flexilis* E. James, limber pine, Tree. Occasional in subalpine forest. 8000-9950 ft. Sugarloaf Mountain, Staircase Canyon, vicinity of Heart Bar Peak. *Fraga 2929.*

- Pinus jeffreyi* Grev. & Balf., jeffrey pine, Tree. Common and often dominant tree in yellow pine and mixed forest. 5000-9000 ft. *Mistretta 4055*.
- Pinus lambertiana* Dougl., sugar pine, Tree. Occasional in mixed and yellow pine forests. 5100-8000 ft. Kilpecker Creek, Cold Creek, vicinity of Seven Oaks, South Fork Campground, Coon Creek. *Mistretta 4049*.
- Pinus monophylla* Torr. & Frém., single leaf pinyon, Tree. Occasional on dry slopes in chaparral and desert transition zones. 7500-9600 ft. Vicinity of Frontline Road and Coon Creek. *Mistretta 3390*.
- Pinus ponderosa* Douglas ex Lawson & C. Lawson var. *ponderosa*, ponderosa pine, Tree. Uncommon in mixed forests. 5200-6400 ft. Vicinity of Seven Oaks, and Barton Flats. *Mistretta 4047*.
- Pseudotsuga macrocarpa* (Vasey) Mayr, big-cone Douglas fir, big-cone spruce, Tree. Occasional at lower elevations of study area in chaparral transition zones. 5500-5800 ft. Round Cienega Creek, vicinity of Seven Oaks. *Mistretta 3784*.

## ANGIOSPERMAE - DICOTYLEDONES

### ACERACEAE

- Acer glabrum* Torr. var. *diffusum* (Greene) F. J. Smiley, mountain maple, Large shrub. Occasional on moist to dry montane slopes. 8000-9500 ft. Sugarloaf Mountain and vicinity of Barton Flats. *Mistretta 3329*.
- Acer macrophyllum* Pursh, bigleaf maple, Tree. Occasional along streambanks and canyons. 5500-6300 ft. Vicinity of Barton Flats and Pinezanita. *Sanders 14991*.
- Acer negundo* L. subsp. *californicum* (Torr. & A. Gray ) Wesmael, California box elder, Tree. Rare in chaparral. 4850 ft. Seven Oaks. *Wood 2633*.

### ADOXACEAE

- Sambucus nigra* L. subsp. *caerulea* (Raf.) Bolli, blue elderberry, Large shrub. Uncommon in open places in forest. 6500-8300 ft. Radford Road above Staircase Canyon, Big Meadow, South Fork, Cienega Seca Creek, Coon Creek, vicinity of Mission Creek Campground. *Fraga 3147*.

### AMARANTHACEAE

- \**Amaranthus albus* L., prostrate pigweed, Annual. Uncommon in disturbed areas. 5000 ft. Only one collection from the Seven Oaks area. *White 2398 (UCR)*.

- Amaranthus californicus*** (Moq.) S. Watson, California amaranth, Annual. Uncommon on dry margins of lakes and ponds. 6000-7000 ft. Vicinity of Barton Flats. Only a few collections from the study area; last collection in 1948. *Cooper 2902*.
- Amaranthus powellii*** S. Watson, Powell's amaranth, Annual. Uncommon in disturbed areas. 5600 ft. Vicinity of Angelus Oaks. *White 2390*.
- \****Amaranthus retroflexus*** L., redroot amaranth, Annual. Uncommon along riparian areas. 5200 ft. Vicinity of Seven Oaks. *Sanders 15690*.
- Chenopodium atrovirens*** Rydb., pinyon goosefoot, Annual. Uncommon on open dry sandy areas in forest understory and adjacent to meadows and streams. 6500-8000 ft. Fish Creek (Aspen Grove), Fish Creek Meadows, Coon Creek. *White 606*.
- Chenopodium berlandieri*** Moq., pitseed goosefoot, Annual. Occasional in dry and open disturbed areas. 6625 ft. Big Meadows. *Fraga 2314*.
- Chenopodium denticatum*** A. Nelson, narroleaf goosefoot, Annual. Occasional on dry flats under pines. 6500-8500 ft. Vicinity of Sugarlump Peak; South Fork Campground, Wildhorse Creek, Cienega Seca Creek, Lightning Gulch. *White 13187*.
- Chenopodium fremontii*** S. Watson, Fremont's goosefoot, Annual. Occasional on dry slopes and benches, roadside, meadows. 5000-8800 ft. Near Sugarlump, vicinity of Seven Oaks, Barton Flats, Heart Bar, vicinity of Jenks Lake, South Fork. *Mistretta 4112*.
- \****Dysphania botrys*** (L.) Mosyakin & Clemants, Jerusalem-oak, feather-geranium, Annual. Occasional on roadsides of Hwy 38 between Angelus Oaks and Barton Flats. [*Chenopodium botrys* L.]. *Wood 2275*.
- \****Kochia scoparia*** (L.) Schrader, summer cypress, Annual. Uncommon on roadsides. 5800 ft. Cold Creek. *Wood 2608*.
- Monolepis spathulata*** A. Gray, beaver povertyweed, Annual. Occasional in moist, subalkaline streambanks and meadows. 6700-7800 ft. Big Meadows, Cienega Seca Creek, vicinity of Heart Bar. *Fraga 3658*.
- \****Salsola tragus*** Nelson, prickly Russian thistle, Annual. Uncommon in disturbed areas. 5500-7000 ft. Cienega Seca Creek, Seven Oaks. *Mistretta 4064*.

## ANACARDIACEAE

- Rhus trilobata*** Nutt. ex Torr. & A. Gray, skunkbush sumac, Small shrub. Occasional on slopes lower elevations within the study area. 5000-6000 ft. Santa Ana River Canyon, vicinity of Seven Oaks. *Fraga 3729*.



## APIACEAE

- Berula erecta* (Huds.) Coville, water parsnip, Perennial herb. Rare at stream side 4920 ft. Clarks Ranch. *Wood* 2691.
- Cicuta douglasii* (DC.) J.M. Coult. & Rose, western water hemlock, Perennial herb. Rare in wet places often in water. 5000-6000 ft. Vicinity of Seven Oaks. *Helmkamp s.n. (UCR)*.
- \**Conium maculatum* L., poison hemlock, Perennial herb. Occasional along riparian areas. 5000-5500 ft. Vicinity of Seven Oaks along the Santa Ana River. *Fraga* 2513.
- Heracleum lanatum* Michaux., common, Perennial herb. Occasional in meadows and streams. 5200-7300 ft. Vicinity of Jenks Lake, Barton Creek, Rattlesnake Creek, Wildhorse Creek, Fish Creek. *Wood* 963.
- Lomatium dissectum* (Nutt. ex Torr. & A. Gray ) Mathias & Constance var. *multifidum* (Nutt. ex Torr. & A. Gray ) Mathias & Constance, fernleaf biscuitroot, Perennial herb. Uncommon on dry slopes. 4900-6300 ft. Vicinity of Pinezanita, Barton Flats. *Fraga* 2797.
- Lomatium nevadense* (S. Watson) J. M. Coult. & Rose var. *parishii* (J. M. Coult. & Rose) Jeps., Nevada biscuitroot, Geophyte. Occasional in rocky areas in pine forest. 9100-9950 ft. Summit of Sugarloaf Mountain. and ridgelines. *Fraga* 2665.
- Oenanthe sarmentosa* J. S. Presl, water parsely, Geophyte. Occasional in shaded riparian areas. 5300-6000 ft. Vicinity of Seven Oaks, near Staircase Canyon, along Santa Ana River near Barton Flats. *Mistretta* 4086.
- †*Oreonana vestita* (S. Watson) Jeps., woolly mountain parsley, Perennial herb. Uncommon on subalpine fields and open rocky areas. 8700 ft. Ridgeline between Sugarlump and Sugarloaf Peak. *Gross* 4017.
- Osmorhiza berteroi* DC., sweetcicely, Geophyte. Occasional on wet banks, dry flats, shaded slopes. 5000-7300. Pinezanita, Hathaway Flat, Lost Creek, Fish Creek (Aspen Grove), South Fork. *Gross* 4124.
- Osmorhiza brachypoda* Torr., California sweetcicely, Geophyte. Occasional in shaded woods, open grassland. 5000-6300 ft. Barton Flats, Pinezanita, and vicinity of Seven Oaks. *Fraga* 2763.
- †*Oxypolis occidentalis* J.M. Coult. & Rose, western cowbane, Geophyte. Uncommon in moist meadows. 6700-6800 ft. Sugarloaf Meadow. *Stoughton* 470.
- †*Perideridia parishii* (J. M. Coult. & Rose) A. Nelson & J. F. Macbr. subsp. *parishii*, Parish's yampah, Geophyte. Uncommon in wet meadows. 6200-7500 ft. Sugarloaf Meadow, Horse Meadows, Barton Flats, South Fork. *Fraga* 2442.

- †*Podistera nevadensis* (A. Gray ) S. Watson, Nevada podistera, Perennial herb. Rare and only known from one collection on the Summit of Sugarloaf Mountain. Not seen since 1906. *Grinnell s.n. (CAS)*.
- Sphenosciadium capitellatum* A. Gray, woollyhead parsnip, ranger buttons, Perennial herb. Occasional in wet meadows and riparian areas. 6300-7500 ft. Big Meadow, Wildhorse Meadow, Coon Creek, Fish Creek, South Fork, Wildhorse Creek, Mile Creek, East Fork of Barton Creek. *Gross 4157*.
- Tauschia parishii* (J. M. Coult. & Rose) J. F. Macbr., Parish's umbrellawort, Geophyte. Occasional on dry brushy slopes, rocky terraces. 6400-7800 ft. Wildhorse Canyon, Barton Flats, Poopout Hill, Radford Road, and South Fork. *Wood 1003*.

## APOCYNACEAE

- Apocynum androsaemifolium* L., spreading dogbane, Perennial herb. Occasional on rocky slopes, meadows. 5200-7400 ft. Vicinity of Barton Flats, Seven Oaks, Cienega Seca Creek, Wildhorse Creek, Horse Meadows, and Coon Creek. *Wood 1228*.
- Asclepias eriocarpa* Benth., woollypod milkweed, Perennial herb. Occasional in open woods, grasslands, roadsides. 5000-7000 ft. Angelus Oaks, Seven Oaks, Clarks Grade, Jenks Lake, Barton Flats, Heart Bar, Wildhorse Canyon, Cienega Seca Creek. *Fraga 3048*.
- Asclepias fascicularis* Decne., Meican whorled milkweed, Perennial herb. Rare on edges of riparian areas. 5000 ft. Clarks Ranch. *Wood 2681*.
- \**Vinca major* L., bigleaf periwinkle, Perennial herb. Uncommon in shaded places, especially along streams. 5000-5300 ft. Vicinity of Seven Oaks. *Mistretta 3862*.

## ASTERACEAE

- Achillea millefolium* L., yarrow, Perennial herb. Common in wet meadows, river banks, dry forests. 6000-8000 ft. Bellyache Springs, Barton Flats, Wildhorse Meadow, Big Meadows, Lost Creek, Jenks Lake, and Cienega Seca Creek. *White 13167*.
- Agoseris grandiflora* (Nutt.) Greene, giant dandelion, Perennial herb. Uncommon in moist areas, Santa Ana River. *Munz 8457*.
- Agoseris heterophylla* (Nutt.) Greene, annual mountain dandelion, Annual. Occasional in meadows and moist areas. 6700-8700 ft. Big Meadows, Sugarloaf Meadow, Wildhorse Meadows. *Fraga 2452*.

- Agoseris retrorsa*** (Benth.) Greene, spearleaf mountain dandelion, Perennial herb. Occasional on dry flats, open woodland. 4500-6700 ft. Seven Oaks, Filaree Flat, Barton Flats, Lost Creek, and Lightning Gulch. *Fraga* 2776.
- Ambrosia acanthicarpa*** Hook., annual burrweed, flatspine bur ragweed, Annual. Occasional in open disturbed areas, and roadsides. 5000-7000 ft. Seven Oaks, College Camp, Cienega Seca Creek, and Wildhorse Creek. *Wood* 1281.
- Ambrosia confertiflora*** DC., weakleaf bur ragweed, Perennial herb. Uncommon on disturbed areas near roads. 7000-7300 ft. Cienega Seca Creek. *White* 13197.
- Ambrosia psilostachya*** DC., western ragweed, Perennial herb. Uncommon dry meadow 4920 ft. Clarks Ranch. *Wood* 2689.
- Anaphalis margaritacea*** (L.) Benth. & Hook., western pearly everlasting, Perennial herb. Uncommon on dry slopes, seeps. 5000-7400 ft. Pinezanita, Hathaway Flat, Barton Creek, Horse Meadows. *Mistretta* 4078.
- Antennaria dimorpha*** (Nutt.) Torr. & A. Gray, low pussytoes, Perennial herb. Uncommon on dry flats, pebble plains. 6200-9100 ft. Big Meadows, South Fork Campground, Sugarloaf Mountain. *Gross* 3995.
- †***Antennaria marginata*** Greene, whitemargin pussytoes, Perennial herb. Uncommon on rocky slopes and ledges above river. 7000-7500 ft. South Fork. *Bell* 446.
- Antennaria rosea*** Greene, rosy pussytoes, Perennial herb. Common in areas under pines, rocky slopes and flats. 6000-9000 ft. Vicinity of Barton Flats, Fish Creek, Heart Bar, Sugarloaf Mountain. *Gross* 3996.
- Arnica chamissonis*** Less. subsp. ***foliosa*** (Nutt.) Maguire, leafy arnica, meadow arnica, Perennial herb. Uncommon in meadows, and seeps, 8500 ft. Wildhorse Meadows. *White* 12363.
- Arnica discoidea*** Benth., rayless arnica, Perennial herb. Uncommon on dry slopes in forest. 5000-5500 ft. Vicinity of Pinzanita and Seven Oaks. *Sanders* 31350.
- Artemisia douglasiana*** Besser in Hook., mugwort, Perennial herb. Uncommon on edges of riparian areas. 5550 ft. Santa Ana River in the vicinity of Staircase Canyon. *Mistretta* 3508.
- Artemisia dracunculus*** L., wild tarragon, Perennial herb. Occasional in open places, disturbed areas, roadsides. 5200-8000 ft. Vicinity of Seven Oaks, Radford Road, Fish Creek, Wildhorse Creek, and Coon Creek. *Wood* 1280.
- Artemisia ludoviciana*** Nutt. subsp. ***incompta*** (Nutt.) Cronq., mugwort, silver wormwood, Perennial herb. Occasional on dry slopes, moist banks. 6000-7000 ft. South Fork Campground, Big Meadows, South Fork. *Stoughton* 602.
- Artemisia ludoviciana*** Nutt. subsp. ***ludoviciana***, mugwort, silver wormwood, Perennial herb. Dry slopes and flats. 6000-7000 ft. Barton Flats, South Fork Campground, Lost Creek, Fish Creek, Big Meadows, Cienega Seca Creek. *Wood* 1126.

- Artemisia tridentata*** Nutt. subsp. ***tridentata***, big sagebrush, Large shrub. Dry openings of pine forests and along side of meadows. 5000-8000 ft. Common throughout the study area. *Cooper 2877*.
- Artemisia tridentata*** Nutt. subsp. ***vaseyana*** (Rydb.) Beetle, mountain big sagebrush, Large shrub. common in dry open areas. 5000-7000 ft. Seven Oaks, Fish Creek. *Mistretta 3474*.
- Bahia dissecta*** (A. Gray ) Britton, ragged leaf bahia, Annual. Rare on rocky slopes. 6500-8500 ft. Cienega Seca, Fish Creek, Lost Creek, South Fork, Sugarloaf Mountain, Wildhorse Meadows. *Stoughton 508*.
- Brickellia californica*** (Torr. & A. Gray ) A. Gray, California brickellbush, Small shrub. Common in washes, dry slopes. 5500-7000 ft. Round Cienega Creek, vicinity of Santa Ana River, Wildhorse Creek, Cienega Seca Creek. *Mistretta 3497*.
- Brickellia oblongifolia*** Nutt. var. ***linifolia*** (D. Eaton) Robinson, Mojave brickellbush, Suffruticose perennial. Uncommon on slopes and canyons. 7000 ft. Cienega Seca Creek. *Wood 955*.
- Calycoseris parryi*** A. Gray, yellow tackstem, Annual. Rare on open slopes. 8600 ft. Ridgeline NW of Cienega Seca near Blue Sky Meadow Camp. Sporadic in the study area. *Wood 915*.
- Chaenactis glabriuscula*** DC. var. ***glabriuscula***, yellow pincushion, Annual. Uncommon in dry areas. 6000-7500 ft. Hamilton Creek, Rattlesnake Creek, South Fork Campground, Wildhorse Road, Cienega Seca Creek. *DeGroot 6081*.
- Chaenactis santolinoides*** Greene, santolina pincushion, Perennial herb. Occasional in open woodland, dry slopes. 4500-7000 ft. Vicinity of Filaree Flat, Barton Flats, Fish Creek, Big Meadows, Wildhorse Creek, Heart Bar. *Fraga 3071*.
- Chrysothamnus viscidiflorus*** (Hook.) Nutt. subsp. ***viscidiflorus***, yellow rabbitbrush, Small shrub. Occasional on rocky slopes. 6500-9500 ft. Sugarlump, Heart Bar, Coon Creek, Cienega Seca Creek, Sugarloaf. *Gross 5431*.
- Cirsium occidentale*** (Nutt.) Jeps. var. ***californicum*** (A. Gray ) D. J. Keil & C. Turner, California thistle, Biennial herb. Occasional on dry slopes. 6000-8500 ft. Hathaway Flat, Radford Road, Barton Flats, Wildhorse Road, and Cienega Seca. *White 12984*.
- Cirsium occidentale*** (Nutt.) Jeps. var. ***occidentale***, western thistle, Biennial herb. Dry slopes. 6000-8000 ft. Hathaway Flat, and Radford Road. *Mistretta 3380*.
- Cirsium scariosum*** Nutt. var. ***congdonii*** (R.J. Moore & Frankton) D.J. Keil, dwarf thistle, Perennial herb. Occasional in meadows. 5300-9000 ft. Barton Flats, Fish Creek, Sugarloaf Meadows, and Wildhorse Meadows. *Fraga 2701*.

- \**Cirsium vulgare* (Savi) Ten., bull thistle, Biennial. Occasional along riparian areas. 5300-7500 ft. Seven Oaks, Rattlesnake Creek, Wildhorse Creek, Cienega Seca Creek. *Fraga* 2621.
- \**Coreopsis tinctoria* Nutt., Golden tickseed, Annual. Scarce escaped cultivar on roadside. 6400 ft. Vicinity of Barton Flats. *Wood* 2434.
- Crepis acuminata* Nutt., long leaved hawksbeard, Perennial herb. Uncommon on steep slopes. 6300-8500ft. Barton Flats, Heart Bar, Sugarlump, Sugarloaf Mountain. *Mistretta* 3462.
- Ericameria nauseosa* (Pall. ex Pursh) G.L. Nesom & G.I. Baird var. *oreophila* (A. Nelson) G.L. Nesom & G.I. Baird, rabbitbrush, Large shrub. Occasional on dry, rocky, sandy river bed. 7500-8100 ft. Coon Creek. *Gross* 5417.
- Ericameria linearifolia* (DC.) Urbatsch & Wussow, narrowleaf goldenbush, Small shrub. Uncommon on dry slopes. 5760 ft. Round Cienega Creek. *Mistretta* 3793.
- Ericameria nauseosa* (Pall.) G.L. Nesom & G.I. Baird var. *bernardina* (H.M. Hall) G.L. Nesom & G.I. Baird, rabbitbrush, Small shrub. Common in dry open areas. 6000-8000 ft. Barton Flats, South Fork Campground, Big Meadows, Heart Bar, Coon Creek, Wildhorse Meadow, Cienega Seca Creek. *Gross* 5423.
- Ericameria parishii* (Greene) H. M. Hall var. *parishii*, Parish's rabbitbrush, Small shrub. Uncommon in oak woodland 5800 ft. Vicinity of Angelus Oaks, Jenks Lake. *Wood* 2638.
- Ericameria parryi* (A. Gray ) G.L. Nesom & G.I. Baird, Parry's rabbitbrush, Small shrub. Uncommon in rocky places, pebble plains. 6300-8500 ft. South Fork Campground, Coon Creek, Sugarloaf Mountain. *De Groot* 6233.
- Ericameria pinifolia* (A. Gray ) H. M. Hall, pine bush, Small shrub. Occasional on low chaparral slopes. 4800-5200 ft. Clarks Grade. *Fraga* 3762.
- Erigeron aphanactis* (A. Gray ) Greene var. *congestus* (Greene) Cronq., rayless shaggy fleaban, Perennial herb. Occasional on pebble plains, and open areas. 7000-9700 ft. Sugarloaf Mountain, Heart Bar Creek, Wildhorse Canyon, Coon Creek, Mission Creek, Fish Creek Meadows, Cienega Seca Creek. *Fraga* 2996.
- Erigeron breweri* A. Gray var. *breweri*, Brewer's fleabane, Perennial herb. Occasional on open rocky places. 6000-8500 ft. Frog Creek, Jenks Lake, Fish Creek, Big Meadows, Cienega Seca Creek, Coon Creek, Wildhorse Meadows, Mission Creek. *Fraga* 2317.
- Erigeron breweri* A. Gray var. *covillei* (Greene) G.L. Nesom, Coville's fleabane, Perennial herb. Uncommon on open rocky places. 6300-8500 ft. Barton Flats, Hamilton Creek, Radford Road, Sugarlump. *Mistretta* 4052.
- †*Erigeron breweri* A. Gray var. *jacinteus* (H. M. Hall ) Cronq., San Jacinto Mtns. daisy, Perennial herb. Uncommon on open, dry, rocky slopes. 7200-8400 ft. vicinity of Mission Creek. *Fraga* 3034.

- \*Erigeron canadensis** L., horseweed, Annual (sometimes treated as introduced). Uncommon along riparian areas and disturbed areas, probably introduced. 5000-8400 ft. Seven Oaks, Barton Flats, Big Meadows, Wildhorse Meadows, Cienega Seca Creek. *Mistretta* 4116.
- Erigeron divergens** Torr. & A. Gray, spreading fleabane, Annual or biennial. Common along roadsides and open areas in forest. 5000-7800 ft. South Fork, Barton Flats, Vicinity of Seven Oaks, Wildhorse Canyon Road, Cienega Seca. *Gross* 3520.
- Erigeron foliosus** Nutt. var. **foliosus**, leafy fleabane, Perennial herb. Occasional on open areas in forest. 5000-8000 ft. Barton Flats, Heart Bar, Cienega Seca, Vicinity of Seven Oaks. *White* 13228.
- Eriophyllum confertiflorum** (DC.) A. Gray var. **confertiflorum**, golden yarrow, Suffruticose perennial. Common on dry slopes and flats chaparral and forest. 4500-8500 ft. Barton Flats, Heart Bar, Vicinity of Seven Oaks, Santa Ana River trail. *Wood* 1035.
- Gutierrezia californica** (DC.) Torr. & A. Gray, matchweed, snakeweed, Suffruticose perennial. Uncommon on dry slopes and flats. 6200-8800 ft. Barton Flats, and Sugarlump Peak. *Mistretta* 3461.
- Gutierrezia sarothrae** (Pursh) Britton & Rusby, broom snakeweed, Suffruticose perennial. Common on open dry slopes. 6300-8700 ft. Sugarlump & Sugarloaf Mountain, Heart Bar, South Fork Campground, Fish Creek, Barton Flats, Big Meadows, Coon Creek. *Fraga* 3150.
- Helenium bigelovii** A. Gray, Bigelow's sneezeweed, Perennial herb. Occasional in meadows, springs, and riparian areas. 6500-8500 ft. Barton Creek, Lost Creek, Sugarloaf Meadow, Fish Creek, Wildhorse Meadow, South Fork, Cienega Seca Creek. *Fraga* 2425.
- Helianthus gracilentus** A. Gray, slender sunflower, Perennial herb. Occasional on dry slopes. 5500-7500 ft. Round Cienega Creek, Radford Road. *Mistretta* 3803.
- Heterotheca grandiflora** Nutt., telegraph weed, Biennial herb. Uncommon in open disturbed areas. 4900 ft. Clarks Ranch. *Wood* 2701.
- Heterotheca sessiliflora** (Nutt.) Shinners subsp. **fastigiata** (Greene) Semple, erect goldenaster, Perennial herb. Uncommon on dry slopes and roadsides. 5225 ft. Confluence of Barton Creek and Santa Ana River. *Mistretta* 3868.
- Hieracium albiflorum** Hook., white flowered Hawkweed, Perennial herb. Uncommon on dry slopes, rocky areas, open forests. 5500-8000 ft. Seven Oaks, Lost Creek, South Fork, Fish Creek, Wildhorse Creek, Heart Bar. Yellow and white floral forms present. The yellow form may be closely related to *H. bolanderi*, but needs study. *Fraga* 2398.
- Hulsea heterochroma** A. Gray, redbay alpinegold, Biennial herb. Uncommon on rocky slopes and flats. 5000-8000 ft. Seven Oaks, Coon Creek, Mission Creek. *Bell* 396.

- Hulsea heterochroma*** A. Gray x ***Hulsea vestita*** A. Gray subsp. ***parryi*** (A. Gray) Wilken, Biennial herb. Rare on exposed ridge in recently burned area (Millard Fire 2006) near Mission Creek. *Honer* 3588.
- † ***Hulsea vestita*** A. Gray subsp. ***parryi*** (A. Gray) Wilken, Parry's alpinegold, Biennial herb. Occasional in open areas in pine forest and sagebrush scrub. 6000-9900 ft. Along Santa Ana River, South Fork Campground, Big Meadows, Fish Creek, Mission Creek, Heart Bar, Coon Creek, Wildhorse Creek, Sugarloaf Mountain, Cienega Seca, *Fraga* 2935.
- Hymenopappus filifolius*** Hook. var. ***lugens*** (Greene) Jeps., fineleaf hymenopappus, Perennial herb. Occasional on dry slopes and flats in open forests. 6000-8000 ft. Barton Flats, Jenks Lake, South Fork, Coon Creek, Mission Creek, Wildhorse Road, Heart Bar, Cienega Seca Creek, *Fraga* 2862.
- \* ***Lactuca serriola*** L., prickly lettuce, Annual. Occasional in disturbed areas often in moist meadows and along streams. 6500-8500 ft. Radford Road., west ridge of Sugarloaf Mountain, Cienega Seca Creek. *Wood* 1047.
- Layia glandulosa*** (Hook.) Hook. & Arn., whitedaisy tidytips, Annual. Uncommon in open areas and slopes. 8000-8500 ft. Cienega Seca, Wildhorse Meadow. *Wood* 1034.
- Lepidospartum squamatum*** (A. Gray) A. Gray, scalebroom, California broomsage, Large shrub. Occasional in open washes and flats 5539 ft. Vicinity of Seven Oaks. *Mistretta* 3500.
- Lessingia filaginifolia*** Hook. & Arn., California sandaster, Suffruticose perennial. Common in openings of forest and on slopes. 6500-7500 ft. Forsee Creek, Radford Road., Jenks Lake, Barton Flats, Wildhorse Creek. *Mistretta* 3273.
- Machaeranthera canescens*** (Pursh) A. Gray var. ***canescens***, hoary tansyaster, Perennial herb. Occasional in understory of forest and open areas. 6500-8500 ft. Forsee Creek, Frog Creek, Fish Creek, Sugarlump, Wildhorse Meadow, Fish Creek, Heart Bar, Coon Creek, Cienega Seca Creek, Sugarloaf Mountain. *Fraga* 3137.
- Madia elegans*** Lindl., common madia, Annual. Occasional in open areas. 5000-8000 ft., vicinity of Barton Flats, Fish Creek, Jenks Lake, Lost Creek, Pinezanita, South Fork Campground, Sugarload Meadow. Plants in this region have been identified as *M. elegans* subsp. *wheeleri* (A. Gray) Keck. *Fraga* 2387.
- Madia gracilis*** (Sm.) D. D. Keck, gumweed madia, Annual. Uncommon in chaparral. 4900 ft. Vicinity of Seven Oaks. *Wood* 2139.
- Malacothrix clevelandii*** A. Gray, Cleveland's dandelion, Annual. Wooded slopes. 5000 ft. Santa Ana River Trail between Angelus Oaks and Glass Road. *Sander* 31351 (UCR).

***Matricaria discoidea*** DC., pinapple weed, Annual. Uncommon on disturbed open flats. 6300 ft. Vicinity of Barton Flats. *Fraga* 3462.

†***Packera bernardina*** (Greene) W.A. Weber & Á. Löve, San Bernardino ragwort, Perennial herb. Uncommon in mixed forest understory on rocky slopes. 6000-8000 ft. Sugarloaf Mountain, vicinity of Barton Flats. *Fraga* 2871.

†***Packera ionophylla*** (Greene) W.A. Weber & Á. Löve, Tehachapi ragwort, Perennial herb. Occasional in mixed forest understory on rocky slopes. 6000-8000 ft. Coon Creek, Heart Bar, Fish Creek, Santa Ana River Trail, South Fork trail, Sugarloaf, and Barton Flats. *Fraga* 2791.

***Pseudognaphalium californicum*** (DC.) Anderb., California everlasting, biennial. Uncommon on open or wooded slopes. 5700 ft. Near Stetson Creek Road. *Mistretta* 3800.

\****Pseudognaphalium luteoalbum*** (L.) Hilliard & B.L. Burt, weedy cudweed, Annual. Uncommon at margin of lake 6500 ft. Jenks Lake. *Wood* 2340.

***Pseudognaphalium stramineum*** (Kunth) Anderb., everlasting cudweed, cotton batting, Annual or biennial herb. Occasional in meadows, riparian and other moist areas. 6500-7500 ft. Barton Creek, Sugarloaf Meadow, Heart Bar, Wildhorse Trail, Cienega Seca Creek. *Wood* 1226.

***Pseudognaphalium thermale*** (E.E. Nelson) G.L. Nesom, Wright's cudweed, Perennial herb. Uncommon on dry slopes and forests. 6000-8000 ft. Barton Flats, Sugarloaf Meadow, Cienega Seca. *Fraga* 3733.

***Rafinesquia californica*** Nutt., California chicory, California plumseed, Annual. Occasional in chaparral-woodland transition zone. 4500-5000 ft. Vicinity of Angelus Oaks. *De Groot* 6070.

***Senecio flaccidus*** Less. var. ***douglasii*** (DC.) B. L. Turner & T. M. Barkley, Douglas' groundsel, Douglas' ragwort, Small shrub. Gravelly river banks, sandy washes. 5000-5500 ft. Vicinity of Seven Oaks. *Mistretta* 3866.

***Senecio scorzonella*** Greene, Sierra ragwort, Perennial herb. Locally abundant in the spring of meadow. 7800 ft. Known from one occurrence at lower Wildhorse Meadow. Disjunct occurrence from the Sierra Nevada. *Wood* 1029.

***Senecio spartioides*** Torr. & A. Gray, broom-like ragwort, Small shrub. Uncommon on open slopes. 7900 ft. Ridgeline between N and S Fork Mission Creek. *Honer* 3603.

***Senecio triangularis*** Hook., arrowleaf ragwort, Perennial herb. Occasional in moist meadows and stream edges. 6500-7500 ft. South Fork of the Santa Ana River. *De Groot* 6183.

***Solidago velutina*** DC. subsp. ***californica*** Nutt., California goldenrod, Perennial herb. Common on the edge of meadows and streams. 6500-8000 ft. Radford Road, Barton Flats, Sugarloaf Meadow, Wildhorse Creek, Coon Creek, Cienega Seca, Mission Springs Meadow. *Fraga* 3148.



- Solidago confinis*** A. Gray, southern goldenrod, Perennial herb. Occasional in meadows and stream sides. 5000-8000 ft Seven Oaks, Sugarloaf Meadow, Wildhorse Creek, Heart Bar, Mission Springs Meadow, Cienega Seca Creek. *Fraga* 2432.
- \****Sonchus asper*** (L.) Hill, Spiny-leaf sow-thistle, Annual. Occasional in moist places along streams. 6000-7000 ft. Seven Oaks, Rattlesnake Canyon, Heart Bar, Cienega Seca Creek. *Fraga* 2903.
- \****Sonchus oleraceus*** L., Common sow-thistle, Annual. Occasional Moist places along streams. 6000-8000 ft. Vicinity of South Fork Campground, Cienega Seca. *Fraga* 2543.
- Stephanomeria exigua*** Nutt. subsp. *coronaria* (Greene) Gottlieb, small crown wirelettuce, Annual. Creek bottoms, dry gravelly soil. 6300-7000 ft. South Fork Campground, Heart Bar. *Denslow* 1437.
- Stephanomeria exigua*** Nutt. subsp. *exigua*, small wirelettuce, Annual. Occasional in desert transition zone. 5900-6700 ft. North Fork of Mission Creek. *Bell* 1387.
- Stephanomeria virgata*** Benth., rod wirelettuce, Annual. Occasional on dry slopes and flats. 6200-8000 ft. Barton Flats, Big Meadows, Wildhorse Creek, Fish Creek, Cienega Seca. *Fraga* 2405.
- Symphotrichum ascendens*** (Lindl.) G.L. Nesom, Long-leaved or intermountain or western aster, Perennial herb. Occasional along meadows and stream edges. 6000-7000 ft. Barton Flats, South Fork Campground, Big Meadows, and Heart Bar. [*Aster ascendens* Lindl.]. *Mistretta* 4140.
- †***Symphotrichum defoliatum*** (Parish) G.L. Nesom, San Bernardino aster, Perennial herb. Rare in dry open grasslands and meadows. 4900 ft. Clark's Ranch. [*Aster bernardinus* H.M. Hall]. *Wood* 2695.
- Symphotrichum lanceolatum*** (Willd.) G.L. Nesom var. *hesperium* (A. Gray) G.L. Nesom, white panicle aster, Perennial herb. Rare in meadow 4900 ft. Clarks Ranch. [*Aster hesperius* A. Gray; *Aster lanceolatus* subsp. *hesperius* (A. Gray) Semple & Chmiel.]. *Wood* 2690.
- Symphotrichum spathulatum*** (Lindl.) G.L. Nesom, Western mountain aster, Perennial herb. Occasional in meadows and moist stream edges. 6500-8500 ft. Fish Creek, Big Meadows, Heart Bar, Wildhorse Meadows, Fish Creek. [*Aster occidentalis* (Nutt.) Torr. & A. Gray]. *White* 12335.
- †***Taraxacum californicum*** Munz & I.M. Johnst., California dandelion, Perennial herb. Rare in meadows. 6200-8400 ft. Vicinity of Barton Flats, Big Meadows, Wildhorse Meadows, Fish Creek, Cienega Seca, and Horse Meadows. *O'Brien* 033-2009.
- \****Taraxacum officinale*** Weber ex G. H. Wiggers, common dandelion, Perennial herb. Common in meadows and moist disturbed areas. 5500-8500 ft. Horse

Meadows, Flats, South Fork Campground, Sugarloaf Meadow, Big Meadow, Wildhorse Meadows, Mission Springs Meadow, Cienega Seca. *Fraga* 2684.

***Tetradymia canescens*** DC., spineless horsebrush, Small shrub. Common in mixed forest understory and open areas 6500-900 ft. Jenks Lake, Frog Creek, South Fork, Big Meadow, Wildhorse Road, Cienega Seca Creek, Sugarlump Mountain, Coon Creek. *Fraga* 2320.

\****Tragopogon dubius*** Scop., yellow salsify, Annual. Occasional in meadows, open dry flats and disturbed areas. 5000-8000 ft. Seven Oaks, Jenks Lake, Barton Flats, South Fork Campground, Big Meadow, Wildhorse Road, Cienega Seca. *Fraga* 2305.

***Uropappus lindleyi*** Nutt., Lindley's silver puff, Annual. Occasional on open slopes in chaparral-woodland transition area. 5600 ft. Vicinity of Burro Flats. *Mistretta* 3656.

## BERBERIDACEAE

***Berberis aquifolium*** Pursh var. *dictyota* (Jeps.) Jeps., shining netvein barberry, Large shrub. Uncommon in open woodlands. 1900-5300 ft. Vicinity of Angelus Oaks, Pinezanita, and Seven Oaks. *Mistretta* 3560.

## BETULACEAE

***Alnus rhombifolia*** Nutt., white alder, Tree. Common along stream courses. 6000-7000 ft. Santa Ana River, Jenks Lake, Creek, South Fork. *Mistretta* 3695.

## BORAGINACEAE

***Cryptantha affinis*** (A. Gray) Greene, quill cryptantha, Annual. Uncommon in open areas in usually in forest. 7000-7700 ft. Bellyache Springs, vicinity of Jenks Lake. *Gross* 4174.

***Cryptantha cinerea*** (Greene) Cronq. var. *abortiva* (Greene) Cronq., bownut cryptantha, Perennial herb. Uncommon in sandy soil in open pine flats. 6000-7200 ft. Lost Creek, Big Meadow, Heart Bar, Coon Creek. *Gross* 4138.

***Cryptantha circumscissa*** (Hook. & Arn.) I. M. Johnst., cushion cryptantha, Annual. Occasional in sandy soil in open pine flats. 6000-7200 ft. Lost Creek, Big Meadow, Heart Bar, Coon Creek. 7100-8100 ft. Mission Creek, Fish Creek, Cienega Seca Creek. *White* 13208.

***Cryptantha echinella*** Greene, prickly cryptantha, Annual. Occasional on sandy flats and slopes. 6500-8200 ft. Vicinity of Jenks Lake, Barton Creek, Fish Creek, Wildhorse Canyon, Mission Springs Campground, Cienega Seca. *Mistretta* 3333.

- Cryptantha intermedia*** (A. Gray ) Greene, common cryptantha, Annual. Occasional on dry and open slopes. 5000-7500 ft. Clarks Ranch, Round Cienega Creek, Radford Road, Rattlesnake Creek, trail to Sugarloaf Meadow, Big Meadows, Wildhorse Canyon. *White* 13314.
- Cryptantha micrantha*** (Torr.) I. M. Johnst., redroot cryptantha, Annual. Common in open dry sandy places. 5500-9800 ft. Barton Flats, Big Meadows, Wildhorse Meadows, Mission Creek, Coon Creek, Cienega Seca Creek, Sugarloaf Mountain. *Bell* 398.
- Cryptantha muricata*** (Hook. & Arn.) A. Nelson & J. F. Macbr. var. ***denticulata*** (Greene) I. M. Johnst., prickly-nut cryptantha, Annual. Uncommon in sandy soils in rocky side drainage in yellow pine forest. 8300-8400 ft. Wildhorse Creek. *Stoughton* 254.
- Cryptantha muricata*** (Hook. & Arn.) A. Nelson & J. F. Macbr. var. ***muricata***, showy prickly-nut cryptantha, Annual. Occasional on open dry slopes. 5000-7000 ft. Clarks Ranch, Barton Flats, Creek, Wildhorse Creek, vicinity of Heart Bar. *Wood* 1013.
- Cryptantha simulans*** Greene, pinewoods cryptantha, Annual. Occasional in dry wooded slopes. 5000-7500 ft. Hathaway Flat, vicinity of Pinezanita, Barton Flats, Jenks Lake, Creek, South Fork Campground, Cienega Seca Creek. *Gross* 3994.
- Eriodictyon trichocalyx*** A. Heller var. ***trichocalyx***, hairy yerba santa, Small shrub. Occasional on open slopes and disturbed areas. 5000-8200 ft. Seven Oaks, Radford Road, Wildhorse Canyon, South Fork, Fish Creek, Heart Bar, North Fork Mission Creek. *Gross* 4072.
- Lappula redowskii*** (Hornem.) Greene var. ***redowskii***, flatspine stickseed, Annual. Occasional on meadow edges, dry slopes, sandy flats. 6500-8000 ft. Big Meadows, Fish Creek, Lightning Gulch, Heart Bar, Cienega Seca. *Fraga* 2313.
- Nemophila menziesii*** Hook. & Arn. var. ***menziesii***, baby blue eyes, Annual. Occasional in shaded understory of Chaparral-oak woodland. 5000-5500 ft. Vicinity of Filaree Flat. *Mistretta* 3541.
- Nemophila pedunculata*** Dougl. ex Benth., littlefoot nemophila, meadow nemophila, Annual. Uncommon in oak woodland understory. 4500-6500 ft. Vicinity of Seven Oaks, Filaree Flat and Middle Control Road. *Wood* 2125 .
- Nemophila spatulata*** Cov., Sierra baby blue eyes, Annual. Occasional in vernal moist habitats. 5000-8000 ft. Vicinity of Seven Oaks, Wildhorse Creek. *Fraga* 2761.
- Pectocarya linearis*** (Ruiz & Pav.) DC. subsp. ***ferocula*** (I. M. Johnst.) Thorne, sagebrush combseed, Annual. Uncommon on open slopes. 5500-5700 ft. Creek. *Mistretta* 3902.
- Phacelia austromontana*** J. T. Howell, southern Sierra phacelia, Annual.

Occasional on open slopes. 7500-9700 ft. Coon Creek, Sugarloaf Mountain, Cienega Seca Creek. *Fraga* 2932.

***Phacelia brachyloba*** (Benth.) A. Gray, shortlobe phacelia, Annual. Uncommon on dry slopes, and recently burned areas. 4500-6500 ft. Vicinity of Filaree Flat, Clarks Ranch, vicinity of Barton Flats (few recent collections from the study area). *Munz* 8662.

***Phacelia cicutaria*** Greene var. ***hispida*** (A. Gray ) J. T. Howell, caterpillar phacelia, Annual. Uncommon in open places in oak-pine woodland. 5500-6000 ft. Hathaway Flat. *Sanders* 17376 (*UCR*).

***Phacelia curvipes*** S. Watson, Washoe phacelia, Annual. Common in open areas in the understory of pine woodland. 5000-8200 ft. Vicinity of Seven Oaks, Flats, Barton Flats, Jenks Lake, Wildhorse Road. *Fraga* 2814.

***Phacelia davidsonii*** A. Gray, Davidson's phacelia, Annual. Occasional in the understory of open woodland, slopes and flats. 5000-8000 ft. Seven Oaks, Flats, Staircase Canyon, vicinity of Barton Flats, Hamilton Creek, Jenks Lake, South Fork Campground. *Gross* 3990.

***Phacelia distans*** Benth., common phacelia, Annual. Uncommon in open flats and slopes. 5600 ft. Vicinity of Burro Flats. *Mistretta* 3649.

***Phacelia fremontii*** Torr., Fremont's phacelia, Annual. Uncommon in open sandy areas. 8140 ft. Vicinity of Cienega Seca. *Wood* 929.

***Phacelia hastata*** Lehm. subsp. ***hastata***, silverleaf phacelia, Perennial herb. Occasional in open areas in pine forest. 7800-8600 ft. Wildhorse Meadow, Lightning Gulch, vicinity of Cienega Seca. *White* 12317.

***Phacelia imbricata*** Greene, imbricate phacelia, Perennial herb. Occasional in open areas in the understory of pine forest. 6000-7000 ft. Hathaway Flat, Radford Road, Rattlesnake Canyon. Subsp. ***imbricata*** and subsp. ***patula*** intergrade in the Transverse Ranges. *Fraga* 2911.

***Phacelia ramosissima*** Douglas ex Lehm., branching phacelia, Perennial herb. Occasional in many habitats, often growing at the base of or within shrubs. 5000-8200 ft. Sand Creek, vicinity of Seven Oaks, Wildhorse Road, Coon Creek, Cienega seca. Varieties are difficult and need further study. *Mistretta* 3351.

***Plagiobothrys collinus*** (Phil.) I.M. Johnst. var. ***ursinus*** (A. Gray ) Higgins, popcornflower, Annual. Uncommon in understory of pines. 6500 ft. Barton Flats. *Peirson* 3118.

***Plagiobothrys hispidulus*** (Greene) I.M. Johnst., sleeping popcornflower, Annual. Uncommon in vernal moist areas. 8400 ft. Wildhorse Meadow. *White* 12355.

***Plagiobothrys tenellus*** (Nutt.) A. Gray, slender popcorn flower, Annual. Uncommon in moist open areas. 6300 ft. Barton Flats Campground. *Mistretta* 5358.

***Plagiobothrys torreyi*** (A. Gray ) A. Gray var. ***torreyi***, Torrey's popcornflower, Annual. Uncommon in the understory of pine forest. 6250-6350 ft. Vicinity of Barton Flats. *White* 7500.

## BRASSICACEAE

†***Arabis eschscholtziana*** Andr. ex Ledeb., Eschscholtz's hairy rockcress, Biennial herb. Occasional in damp shady areas, meadows. 6000-7600 ft. Staircase Canyon, Stetson Creek, vicinity of Jenks Lake, South Fork, Wildhorse Creek, Fish Creek, Coon Creek. [*Arabis hirsuta* (L.) Scop. var. *glabrata* Torr. & A. Gray ]. *Mistretta* 3997.

***Barbarea orthoceras*** Ledeb., American yellowrocket, Biennial herb. Occasional in meadows and streams. 4500-8400 ft. Filaree Flat, vicinity of Seven Oaks, Jenks Lake, Lost Creek, Sugarloaf Meadow, Wildhorse Meadows, Fish Creek, South Fork, Cienega Seca Creek, Mission Springs Camp. *Fraga* 2764.

***Boechea californica*** (Rollins) Windham & Al-Shehbaz, California rockcress, Perennial herb. Occasional on dry slopes. 5500-7200 ft. Round Cienega Dreck, Staircase Canyon, Burro Flats, Barton Flats, Radford Road. [*Arabis sparsiflora* Nutt. var. *californica* Rollins] *Stoughton* 343.

†***Boechea parishii*** (S. Watson) Al-Shehbaz, Parish's rock cress, Perennial herb. Occasional on pebble plains and open rocky slopes in pine forest. 8000-9950 ft. Ridgeline and summit of Sugarloaf Mountain, ridgeline east of Heart Bar Peak. [*Arabis parishii* S. Watson]. *Stoughton* 423.

***Boechea perennans*** (S. Watson) W.A. Weber, perennial rockcress, Perennial herb. Uncommon on rocky exposed slope. 5900-6700 ft. North Fork Mission Creek. [*Arabis perennans* S. Watson]. *Bell* 1427.

†***Boechea platysperma*** (A. Gray ) Al-Shehbaz, pioneer rockcress, Perennial herb. Uncommon on shaded slopes in pine forest. 8700-8800 ft. Vicinity of Sugarlump, Sugarloaf Mountain, Wildhorse Spring. [*Arabis platysperma* A. Gray ]. *Stoughton* 494.

***Boechea repanda*** (S. Watson) Al-Shehbaz, repand rock cress, Perennial herb. Uncommon on dry slopes in the understory of pines. 6200-7200 ft. Between Jenks Lake and Horse Meadows, Barton Flats. [*Arabis repanda* S. Watson, *Arabis repanda* var. *greenii* Jeps.]. *Mistretta* 3325.

***Boechea retrofracta*** (Graham) Á. Löve & D. Löve, second rockcress, Perennial herb. Uncommon on open flats and dry slopes in the understory of pines. 6200-8000 ft. Barton Flats, vicinity of Jenks Lake, Heart Bar, Fish Creek. *Boechea retrofracta* is known to have formed hybrids with at least 12 other species. These hybrids differ in macromorphological characters and all documented hybrids are distinct from *B. retrofracta* in the strict sense in having wider (20-30 versus 13-16  $\mu\text{m}$ ), spheroid pollen grains with

asymmetric colpi (FNA 2010). [*Arabis holboellii* Hornem. var. *retrofracta* (Graham) Rydb.]. *Wood* 548.

†*Boecheera shockleyi* (Munz) Dorn, x *B. gracilipes* (Greene) Dorn x *B. thompsonii* (S.L. Welsh) N.H. Holmgren Shockley's hybrid rockcress, Perennial herb. Occasional in open flats and dry slopes in the understory of pines, frequently on limestone. 6200-8000 ft. Vicinity of Coon Creek, and Cienega Seca Creek. *Gross* 4093.

*Boecheera xylopoda* Windham & Al-Shehbaz, bigfoot hybrid rockcress, Perennial herb. Uncommon on slopes and flats. 5200-8200 ft. Barton Creek, Lightning Gulch, Cienega Seca Creek. *Wood* 547.

*Cardamine breweri* S. Watson var. *breweri*, Brewer's bittercress, Perennial herb. Uncommon on shady wet banks of meadows. 7500 ft. South Fork of Santa Ana River. *Wood* 2367.

*Cardamine californica* (Nutt. ex Torr. & A. Gray) Greene var. *integrifolia* (Nutt. ex Torr. & A. Gray) Rollins, milkmaids, Geophyte. Uncommon near creek near mixed oak woodland. 5600-5800 ft. Stetson Creek. *Gross* 4690.

*Cardamine hirsuta* L., hairy bittercress, Annual. Rare in openings of pine oak forest. 5000-5400 ft. Santa Ana River Trail, vicinity of Angeles Oaks. *Sanders* 32474.

\**Cardaria chalapensis* (L.) Hand.-Mazz., lenspod whitetop, Perennial herb. Uncommon in open disturbed areas and roadside. 5700 ft. Vicinity of Flat near heliport. *Fraga* 2857.

*Caulanthus amplexicaulis* S. Watson var. *amplexicaulis*, claspingleaf wild cabbage, Annual. Uncommon on dry open slopes. 6500 ft. East Fork of Hamilton Creek, Rattlesnake Creek. *Mistretta* 3782.

*Caulanthus major* (M. E. Jones) Payson var. *major*, slender wild cabbage, Perennial herb. Uncommon on in the understory of pine forest. 7200-9000 ft. Vicinity of Sugarlump, Wildhorse Creek, vicinity of Onyx Summit. *De Groot* 6226.

*Descurainia incisa* (A. Gray) Britton subsp. *incisa*, mountain tansymustard, Annual. Meadows, moist areas. 5300-7800 ft. Seven Oaks, Big Meadows, Coon Creek. *Gross* 3475.

*Descurainia pinnata* (Walter) Britton subsp. *glabra* (Wooton & Standl.) Detling, western tansymustard, Annual. Common throughout the study area on open areas on flats and slopes. 5500-6500 ft. *Mistretta* 3552.

\**Descurainia sophia* (L.) Webb ex Prantl, herb sophia, Annual. Disturbed areas. 6000-7700 ft. Along Santa Ana River between Burro Flats and South Fork Campground, Big Meadows, Sugarloaf Meadow, Wildhorse Road, Cienega Seca. *Fraga* 2915.

†*Draba corrugata* S. Watson var. *corrugata*, southern California draba, Perennial herb. Occasional on shaded slopes and rocky places, under pines. 6300-9700

ft. Lost Creek, South Fork, Mission Springs, Fish Creek Meadows, Coon Creek, Lightning Gulch, Wildhorse Meadows, Cienega Seca, Sugarloaf Mountain. *Gross* 4091.

***Draba verna*** L., spring draba, Annual. Uncommon in open or disturbed areas. 5200-5400 ft. Vicinity of Seven Oaks. *Mistretta* 3558.

***Erysimum capitatum*** (Douglas) Greene subsp. ***capitatum***, western wallflower, Biennial herb. Occasional on rocky dry slopes, flats under pines. 5400-8800 ft. Sugarlump, Creek, Barton Flats, Wildhorse Meadows, Fish Creek, Heart Bar, Coon Creek, Cienega Seca Creek. *Fraga* 2698.

\****Hirschfeldia incana*** (L.) Lagr.-Fossat, Mediterranean hoary mustard, Annual to perennial herb. Occasional in open disturbed areas. 5200-6870 ft. Hamilton Creek, Cienega Seca Creek. *White* 13219.

***Lepidium virginicum*** L. var. ***pubescens*** (Greene) C. L. Hitchc., hairy wild pepper grass, Annual. Occasional in open disturbed areas often near meadows. 6000-8000 ft. Forsee Creek Trail, Staircase Canyon, Rattlesnake Creek, Barton Flats, Barton Creek, South Fork, Mission Creek, Wildhorse Creek, Cienega Seca Creek. *Wood* 896.

\****Nasturtium officinale*** R.Br., watercress, Perennial herb. Uncommon in meadows and along creeks and streams. 4500-7000 ft. Vicinity of Filaree Flat, Stetson Creek, East Fork of Barton Creek, Sugarloaf Meadow, Santa Ana River NW of South Fork Campground. *Fraga* 2438.

†***Physaria kingii*** (S. Watson) O’Kane & Al-Shehbaz subsp. ***bernardina*** (Munz) O’Kane & Al-Shehbaz, King bladderpod, Perennial herb. Rare on limestone outcrops. 8700 ft. Ridgeline between Sugarlump and Sugarloaf Summit and in the vicinity of Coon Creek. *Stoughton* 636.

***Rorippa sphaerocarpa*** (A. Gray ) Britton, roundfruit yellowcress, Perennial herb. Meadows and moist places. 6300-8400 ft. Barton Flats, Jenks Lake, Wildhorse Meadows, Fish Creek Meadows. *White* 12341.

\****Sisymbrium altissimum*** L., tall tumbled mustard, Annual. Occasional along roadsides and disturbed places. 5600-8100 ft. Burro Flats, Cienega Seca. *Mistretta* 3652.

\****Sisymbrium orientale*** L., Indian hedgemustard, Annual. Uncommon in disturbed areas. 6450 ft. Wildhorse Creek. *Wood* 1279.

†***Streptanthus campestris*** S. Watson, southern jewelflower, Perennial herb. Uncommon on dry slopes. 7500-7800 ft. Head of Clarks Grade near Bellyache Springs. *Stoughton* 582.

***Turritis glabra*** L., tower rockcress, Biennial herb. Occasional in shaded canyons and slopes. 5500-8000 ft. Round Cienega Creek, Radford Road, Hathaway Flat, Lightning Gulch, North Fork Mission Creek, Cienega Seca. [*Arabis glabra* (L.) Benth.]. *White* 13283.

## CACTACEAE

- Cylindropuntia californica* (Torr. & A. Gray ) F.M. Knuth var. *parkeri* (J.M. Coult.) Pinkava, valley cholla, Succulent shrub. Occasional on slopes lower elevations within the study area. 5000-6000 ft. Santa Ana River Canyon near Seven Oaks and Crazy's Wasewagen Camp. *Fraga 3730*.
- Echinocereus mojaviensis* (Engelm. & J.M. Bigelow) Rümpler, Mojave kingcup cactus, Succulent shrub. Occasional on rocky slopes and cliffs. 7000-7700 ft. Coon Creek, Cienega Seca Creek. *De Groot 6107*.
- Opuntia basilaris* Engelm. & J.M. Bigelow var. *basilaris*, beavertail pricklypear, Succulent shrub. Occasional on open slopes and flats. 6300-9000 ft. South Fork, Coon Creek, Wildhorse Creek. *De Groot 6110*.
- Opuntia phaeacantha* Engelm., tulip pricklypear, Succulent shrub. Occasional on open flats and slopes in the understory of mixed oak and pine woodland. 4800-9000 ft. Santa Ana River canyon near Seven Oaks and Pinezanita, South Fork, and vicinity of Onyx Summit. *Wood 1016*.

## CAMPANULACEAE

- Nemacladus interior* (Munz) G. T. Robbins., Sierra threadstem, Annual. Uncommon in sandy soils. 6100-6200 ft. South Fork Campground. *Gross 1139*.
- Nemacladus sigmoideus* G. T. Robbins, sigmoid threadplant, small flowered nemacladus, Annual. Uncommon on dry rocky slopes. 5700-6300 ft. Round Cienega Creek, Hathaway Flat, South Fork Campground. *Mistretta 3795*.

## CANNABACEAE

- Humulus lupulus* L. var. *lupulus*, Hops, Perennial herb. Rare in riparian woodland 5000 ft. Vicinity of Seven Oaks, Lower Heart Bar Creek. *Wood 2632*.

## CAPRIFOLIACEAE

- Lonicera interrupta* Benth., chaparral honeysuckle, Liana, sometimes a scandent shrub. Occasional in chaparral-oak woodlands. 5400-7500 ft. Vicinity of Clark's Grade, Kilpecker Creek, Flat, Radford Road, Seven Oaks, Jenks Lake, Burro Flats. *Mistretta 3847*.
- Symphoricarpos mollis* Nutt. in Torr. & A. Gray, creeping snowberry, Small shrub. Uncommon on shaded slopes. 7700-8500 ft. Ridgeline between Sugarlump and Sugarloaf, Staircase Canyon. *Mistretta 3760*.



*Symphoricarpos rotundifolius* A. Gray var. *parishii* (Rydb.) Dempster, Parish's snowberry, Small shrub. Occasional on dry rocky slopes. 6200-8500 ft. Ridgeline between Sugarlump and Sugarloaf Creek, Jenks Lake, Wildhorse Meadow, Coon Creek, Cienega Seca. *Wood* 932.

## CARYOPHYLLACEAE

- †*Arenaria lanuginosa* (Michaux) Rohrb. subsp. *saxosa* (A. Gray) Maguire, spreading sandwort, Perennial herb. Uncommon on shaded areas under pines and along streams. 6300-8400 ft. South Fork, Santa Ana River Trail, Lost Creek, Fish Creek. *Fraga* 2600.
- \* *Cerastium fontanum* Baumg. subsp. *vulgare* (Hartman) Greuter & Burdet, big chickweed, Annual. Occasional in meadows, riparian situations. 5200-8500 ft. Vicinity of Seven Oaks, Rattlesnake Creek, Barton Flats, Sugarloaf Meadow, South Fork Campground, Wildhorse Creek, Heart Bar. *White* 12302.
- †*Eremogone ursina* (B.L. Rob.) Ikonn., Bear Valley sandwort, Perennial herb. Uncommon on pebble plains. 9200 ft. Vicinity of Onyx Peak. [*Arenaria ursina* B.L. Rob.] *Wood* 65.
- Sagina saginoides* (L.) Karsten, arctic pearlwort, Perennial herb. Occasional along meadows and streams. 7000-8200 ft. East Fork of Barton Creek, Wildhorse Creek. *Mistretta* 4113.
- Silene lemmonii* S. Watson, Lemmon's campion, Lemmon's catchfly, Perennial herb. Occasional along shaded slopes in mixed forest. 4500-6500 ft. Filaree Flat, Pinezanita, Seven Oaks, Round Cienega Creek, Barton Flats. *Fraga* 2794.
- Silene menziesii* Hook., Menzies' campion, Perennial herb. Uncommon in meadows and moist areas. 7500-8000 ft. Santa Ana River South Fork, Fish Creek. *Gross* 3484.
- Silene parishii* S. Watson, Parish's catchfly, Perennial herb. Occasional on open rocky slopes. 6200-9800 ft. West end of Jenks Lake Road, Heart Bar, Wildhorse Road, South Fork, Lost Creek, Fish Creek, Cienega Seca Creek, west ridge and east ridge of Sugarloaf Mountain. *De Groot* 6228.
- Silene verecunda* S. Watson, San Francisco campion, Perennial herb. Occasional in pine forest understory and slopes. 6200-8500 ft. Sugarlump, Forsee Creek Trailhead, Barton Flats, Wildhorse Road, Heart Bar, Fish Creek, North Fork of Mission Creek, Cienega Seca. *Fraga* 2997.
- \**Spergularia rubra* (L.) J.S. Presl & C. Presl, red sandspurry, Annual. Uncommon on disturbed open flats. 6300 ft. Vicinity of Barton Flats. *Fraga* 3464.

***Stellaria calycantha*** (Ledeb.) Bong., long stalked starwort, meadow starwort, Perennial herb. Uncommon in bank of creek. 7300 ft. E. of Jenks Lake (Camp Tulakes). *Munz 12752*.

***Stellaria longipes*** Goldie var. ***longipes***, long stalked starwort, meadow starwort, Perennial herb. Occasional in meadows and moist areas. 6700-8500 ft. Heart Bar, Horse Meadows, South Fork Camp, Sugarloaf Meadow, Big Meadows, Wildhorse Canyon, Heart Bar, Mission Springs Meadows, Cienega Seca. *White 12331*.

\****Vaccaria hispanica*** (Miller) Rauschert, cow soapwort, Annual. Uncommon along disturbed area on roadside. 6400 ft. Vicinity of Barton Flats. *Wood 2229*.

### CERATOPHYLLACEAE

***Ceratophyllum demersum*** L., coon's tail, Aquatic annual. Uncommon in shallow pond. 6700 ft. Only one collection known from study area from Sugarloaf Meadow. *Soza 1434*.

### CISTACEAE

***Helianthemum scoparium*** Nutt., common sun rose, Suffruticose perennial. Uncommon in open areas. 4900 ft. Clarks Ranch. *Wood 2697*.

### CLUSIACEAE

***Hypericum anagalloides*** Cham. & Schlecht., tinker's penny, Perennial herb. Occasional in meadows and moist areas. 4500-8200 ft. Near Filaree Flat, vicinity of University Camp, Sugarloaf Meadow, Wildhorse Meadows, Fish Creek Meadows. *Fraga 2445*.

***Hypericum formosum*** Kunth var. ***scouleri*** (Hook.) J. M. Coult., Scouler's St. Johnswort, Perennial herb. Occasional in meadows and moist areas. 4000-8000 ft. Clarks Ranch, Seven Oaks, vicinity of Jenks Lake, Lost Creek, Fish Creek, Mission Springs Meadow. *Fraga 2459*.

### CONVOLVULACEAE

***Calystegia occidentalis*** (A. Gray) Brummitt subsp. ***fulcrata*** (A. Gray) Brummitt, chaparral false bindweed, Perennial herb. Occasional on open sunny open slopes and flats. 5200-7500 ft. Seven Oaks, Clarks Grade, Radford Road, Barton Flats, South Fork, Coon Creek, Cienega Seca Creek. *Gross 4004*.

***Cuscuta californica*** Hook. & Arn., chaparral dodder, Parasitic annual. Occasional documented on *Eriogonum fasciculatum* var. *polifolium* and *Calystegia*, however host can be various species. 5600-7500 ft. Vicinity of Barton Flats, Radford Road, Seven Oaks. *Bell 1705*.

***Cuscuta subinclusa*** Durand & Hilg., canyon dodder, Parasitic annual. Uncommon on coppice shoots of a shrubby *Quercus*, on burn in chaparral. 5000 ft. In the vicinity of Barton Flats. *Munz 8661*.

## CORNACEAE

***Cornus sericea*** L. subsp. *occidentalis* (Torr. & A. Gray) Fosb., western dogwood, Large shrub. Uncommon in shaded drainages 6200 ft. Stetson Creek. *Wood 2305*.

## CRASSULACEAE

†***Dudleya abramsii*** Rose subsp. *affinis* K. Nakai, San Bernardino Mountains liveforever, Succulent perennial herb. Uncommon on open rock areas on slopes. 7500-8400 ft. Vicinity of Heart Bar Peak and ridges above Coon Creek. *Stoughton 408*.

†***Sedum niveum*** Davidson, Davidson's stonecrop, Succulent perennial herb. Uncommon on rocky slopes and rocky cliffs. 7000-9600 ft. South Fork, Lost Creek, North Fork of Mission Creek, east ridgeline of Sugarloaf Mountain. *Fraga 2933*.

***Sedum spathulifolium*** Hook., broadleaf stonecrop, Succulent perennial herb. Uncommon on shaded rocky cliff faces. 4700-5200 ft. Vicinity of Pinezanita. (ssp. *anomalum*. Variable, intergrading complex). *Fraga 2799*.

## DATISCAEAE

***Datisca glomerata*** (C. Presl) Baill.i, Durango root, Perennial herb. Occasional in dry streambeds or washes. 5000-7800 ft. Vicinity of Seven Oaks, Staircase Canyon. *Mistretta 3751*.

## DIPSACEAE

\****Dipsacus sativus*** (L.) Honck., Indian teasel, Biennial herb. Uncommon in disturbed areas along stream. 5200-5600 ft. Barton Creek. *Fraga 3126*.

## ERICACEAE

- Arctostaphylos glandulosa* Eastw. subsp. *cushingiana* (Eastw.) J.E. Adams ex McMinn, Eastwood's manzanita, Large shrub. Occasional on chaparral slopes. 5000-6000 ft. Along Forest Service Road 2N06, north of Barton Flats. *Keeley 22379*.
- Arctostaphylos glandulosa* Eastw. subsp. *mollis* (J. E. Adams) P. V. Wells, Eastwood's manzanita, Large shrub. Common on chaparral slopes. 5500-6000 ft. Seven Oaks, Clarks Grade. *Mistretta 3531*.
- †*Arctostaphylos parryana* subsp. *tumescens* Lemmon, Parry manzanita, Large shrub. Uncommon in open mixed woodland. 5300-8000 ft. Vicinity of Seven Oaks, Radford Road and Heart Bar Peak. *Keeley 22308*.
- Arctostaphylos patula* Greene, greenleaf manzanita, Large shrub. Common in the understory of yellow pine forest. 5000-9950 ft. Common throughout the study area. *Mistretta 3564*.
- Arctostaphylos pringlei* Parry subsp. *drupacea* (Parry) Wells, pinkbracted manzanita, Large shrub. Occasional in chaparral and mixed pine forests. 5500-7000 ft. Vicinity of Seven Oaks, South Fork, Big Meadows, Wildhorse Trail. *White 12529*.
- Arctostaphylos pungens* Kunth, pointleaf manzanita, Large shrub. Common on chaparral slopes. 5000-6000 ft. Clark's Grade, Vicinity of Seven Oaks, Hamilton Creek, Flats. *Mistretta 3550*.
- Chimaphila menziesii* (D. Don) Sprengel, little prince's pine, Perennial herb. Rare in the understory of oaks woodland. 6250 ft. Forsee Creek, between Angelus Oaks and Seven Oaks. *Vlahos s.n.*
- Chimaphila umbellata* (L.) Bartram, pipsissewa, Perennial herb. Uncommon in flat areas under pines, in pine duff. 6500-7000 ft. Los Creek, South Fork. *Gross 4211*.
- Pterospora andromedea* Nutt., woodland pinedrops, Perennial herb. Occasional under pines, in pine duff. 6000-8500 ft. Barton Flats, Frog Creek, Fish Creek Meadows. *Mistretta 3979*.
- Pyrola asarifolia* Michaux subsp. *asarifolia*, liverleaf wintergreen, Perennial herb. Uncommon in the understory of pine forests. 7000-8000 ft. Fish Creek, Wildhorse Creek. *Fraga 2399*.
- Pyrola picta* Smith, whiteveined wintergreen, Perennial herb. Uncommon on flats or slopes in the understory of pines. 6000-8500 ft. Sugarloaf Mountain., vicinity of Frog Creek, South Fork, Lost Creek, Cienega Seca Creek *Stoughton 562*. We also recognize two taxa that are morphologically distinct and are not currently treated in Baldwin et al. 2012; these are forma *aphylla* represented by *Wood 1135*, and subsp. *denta* represented by *Gross 4117*.

*Sarcodes sanguinea* Torr., snowplant, Perennial herb. Occasional under pines, in pine duff. 6000-8800 ft. Vicinity of Clarks Grade, Barton Flats, Jenks Lake, Wildhorse Meadows, Big Meadows, Coon Creek. *Fraga* 2825.

## EUPHORBIACEAE

*Chamaesyce albomarginata* (Torr. & A. Gray ) Small, whitemargin sandmat, Perennial herb. Occasional on roadsides in compacted soils. 5800-6200 ft. Camp Radford, Staircase Canyon. *Mistretta* 3938.

*Chamaesyce serpyllifolia* (Pers.) Small var. *serpyllifolia*, thymeleaf sandmat, Annual. Occasional along roadsides, dessicated ponds, and in compacted soil. 5000-7700 ft. Seven Oaks, Creek, Barton Flats, Cienega Seca Creek. *Wood* 1144.

*Euphorbia palmeri* S. Watson, woodland spurge, Suffruticose perennial. Occasional in open areas in the understory of pines. 6000-9600 ft. Sugarloaf Mountain, Forsee Creek Trail, Radford Road, Barton Flats, Sugarloaf Meadow, Wildhorse Meadows, Big Meadows, Heart Bar, Fish Creek, Coon Creek, Cienega Seca. *Fraga* 2412.

## FABACEAE

*Acmispon americana* (Nutt.) Rydb. var. *americana*, American bird's-foot trefoil, Annual. Occasional in meadows and near creeks. 5500-7000 ft. Creek, University Camp, Sugarloaf Meadow, Big Meadows. [*Lotus purshianus* Clem. & E.G. Clem. var. *purshianus*]. *Gross* 3515.

*Acmispon argophyllus* (A. Gray ) Brouillet, silver birds foot trefoil, Perennial herb. Occasional in pine forest understory. 6500-6900 ft. Big Meadows, Santa Ana River Trail, Barton Flats, Heart Bar. [*Lotus argophyllus* (A. Gray) Greene]. *Fraga* 2789.

*Acmispon argyraeus* (Greene) Brouillet, canyon bird's-foot trefoil, Perennial herb. Occasional on dry slopes and flats, sandy rocky places, disturbed areas. 6000-7700 ft. South Fork Campground, Fish Creek, Wildhorse Road, Cienega Seca Creek. [*Lotus argyraeus* (Greene) Greene]. *White* 13235.

*Acmispon grandiflorus* (Benth.) Brouillet var. *grandiflorus*, chaparral bird's foot trefoil, chaparral lotus, Perennial herb. Uncommon on slopes in chaparral. 5000-6000 ft. Seven Oaks. [*Lotus grandiflorus* (Benth.) Greene] *Helmkamp s.n.*

*Acmispon heermannii* (Durand & Hilg.) Brouillet subsp. *heermannii*, woolly lotus, Perennial herb. Uncommon on mesic banks and in canyons. 5300-8000 ft. Seven Oaks, Creek, Fish Creek Meadows. [*Lotus heermannii* (Durand & Hilg.) Greene] *Mistretta* 3894.

- Acmispon nevadensis* (S. Watson) Brouillet, Nevada bird's-foot trefoil, Perennial herb. Common on open dry slopes and flats. 6000-8000 ft. Forsee Creek Trail, Radford Road, Horse Meadows, Camp Arbolado, Hathaway Flat, Barton Flats, Jenks Lake, Wildhorse Meadow, Mission Springs Camp. [*Lotus nevadensis* (S. Watson) Greene] *Mistretta* 3428.
- Acmispon strigosus* (Nutt.) Brouillet var. *strigosus*, hairy lotus, Annual. Occasional in open areas. 5000-6000 ft. Clarks Ranch, Flats, Rattlesnake Canyon, Barton Flats, Burro Flats. [*Lotus strigosus* (Nutt.) Greene]. *Mistretta* 3635.
- Amorpha californica* Nutt. var. *californica*, California false indigo, Large shrub. Occasional on slopes in mixed pine forest. 5500-7000 ft. Pinezanita, Radford Camp, Forsee Creek, Rattlesnake Creek, Barton Flats, Jenks Lake, South Fork Campground, Fish Creek, Cienega Seca Creek. *Fraga* 3124.
- †*Astragalus bicristatus* A. Gray, two-crested milkvetch, Perennial herb. Uncommon in understory of pine forest. 6000-8700 ft Sugarlump, Sugarloaf Mountain, Staircase Canyon, University Camp, Fish Creek, vicinity of Heart Bar Peak, Cienega Seca Creek. *Gross* 4012.
- Astragalus douglasii* (Torr. & A. Gray ) A. Gray var. *douglasii*, Douglas's milkvetch, Perennial herb. Occasional on roadsides, open flats, disturbed areas. 5000-7000 ft. Seven Oaks, Flats, Hamilton Creek, South Fork, Heart Bar. *Mistretta* 3529.
- Astragalus douglasii* (Torr. & A. Gray ) A. Gray var. *parishii* (A. Gray ) M. E. Jones, Parish's milkvetch, Perennial herb. Occasional on roadsides, open flats. 5000-7000 ft. Seven Oaks, Flat, Staircase Canyon, Burro Flats, vicinity of mouth of Wildhorse Creek, Heart Bar, Cienega Seca Creek. *Gross* 4024.
- †*Astragalus lentiginosus* Hook. var. *sierrae* M. E. Jones, Sierra milkvetch, Perennial herb. Occasional in sandy washes and flats, roadsides, and in pine duff. 5500-8600 ft. Sugarlump, Creek, Staircase Canyon, Rattlesnake Canyon, Wildhorse Road, Lightning Gulch, Big Meadows, Fish Creek, Heart Bar, Coon Creek, Cienega Seca. *Bell* 401.
- †*Astragalus leucolobus* M. E. Jones, Bear Valley milkvetch, Perennial herb. Occasional in open flat areas in pine forests, dry benches, and roadsides. 6000-9000 ft. Sugarloaf Mountain, Barton Flats, Jenks Lake, road to Sugarloaf Meadow, South Fork Campground, Heart Bar, Coon Creek, vicinity of Onyx Summit. *Fraga* 2790.
- Hoita orbicularis* (Lindl.) Rydb., roundleaf leather-root, Perennial herb. Uncommon near springs, seeps, and other wet places. 5000-5800 ft. Vicinity of Seven Oaks, Clarks Ranch, Round Cienega Creek, Hamilton Creek, Creek. *Mistretta* 4060.
- Hosackia crassifolius* Benth. var. *crassifolius*, big deervetch, Perennial herb. Occasional on dry slopes, hillsides. 4900-7600 ft. Seven Oaks, Creek, Radford Road, Heart Bar. [*Lotus crassifolius* (Benth.) Greene var. *crassifolius*]. *Mistretta* 3682.

- Hosackia oblongifolia*** Benth. var. ***oblongifolia***, streambank bird's-foot trefoil, Perennial herb. Occasional in meadows, seeps, and along streams and creeks. 5500-8200 ft. Seven Oaks, Clarks Grade, Mile Creek, vicinity of Camp Radford, Barton Flats, Sugarloaf Meadow, South Fork Campground, Lost Creek, Wildhorse Road, Big Meadows, Fish Creek, Heart Bar, Coon Creek, North Fork Mission Creek. [*Lotus oblongifolius* (Benth.) Greene var. *oblongifolius*]. *De Groot* 6143.
- Lathyrus vestitus*** Nutt. subsp. ***vestitus***, Pacific pea, Perennial herb. Openings in chaparral, oaks woodland and mixed forest. 5000-6500 ft. Pinezanita, vicinity of Seven Oaks, Hathaway Flat, Barton Flats. *Mistretta* 3726.
- \****Lotus corniculatus*** L., bird's-foot trefoil, Perennial herb. Uncommon on open dry slopes. 6700 ft. Road to Sugarloaf Meadow. *Fraga* 3006.
- Lupinus andersonii*** S. Watson, Anderson's lupine, Perennial herb. Occasional on rocky slopes, flats, meadows, under pines. 5500-9000 ft. Sugarloaf Mountain, Flat, Round Cienega Creek, Clarks Grade, Barton Flats, Horse Meadows, Sugarloaf Meadow, Wildhorse Canyon, Fish Creek, Heart Bar, Coon Creek, Cienega Seca. *Fraga* 2874.
- Lupinus bicolor*** Lindl., miniature lupine, Annual. Uncommon on open slopes. 4800-5200 ft. Road 1N09 near Filaree Flat. *Fraga* 3429.
- Lupinus breweri*** A. Gray var. ***grandiflorus*** C. P. Smith, matted lupine, Perennial herb. Uncommon on pebble plains and openings in pine forest. 9400 ft. East ridge of Sugarloaf Mountain. *Fraga* 2937.
- Lupinus concinnus*** J. G. Agardh subsp. ***concinnus***, bajada lupine, Annual. Occasional on rocky slopes and flats, burned areas. 5600-6100 ft. Hamilton Creek, Radford Creek, Burro Flats. *Mistretta* 3634.
- Lupinus elatus*** I.M. Johnston., silky lupine, Perennial herb. Uncommon in dry forests. 6000-7500 ft. Head of Clarks Grade, Barton Flats, near Heart Bar State Park. *Conrad* 7179 (UC).
- Lupinus excubitus*** M. E. Jones var. ***austromontanus*** (A. Heller) C. P. Sm., mountain bush lupine, southern montane grape lupine, Suffruticose perennial. Occasional on open dry flats, slopes, gravelly creek bottoms, burn areas. 4900-8600 ft. Seven Oaks, Radford Road, Round Cienega Creek, vicinity of Jenks Lake, South Fork, Wildhorse Meadow, Coon Creek, Fish Creek, Cienega Seca Creek. *Fraga* 2781.
- Lupinus formosus*** Greene var. ***formosus***, summer lupine, Perennial herb. Uncommon in open areas of pine forest 8000 ft. Heart Bar. *White* 689 (UCR).
- Lupinus latifolius*** J. Agardh subsp. ***parishii*** (C. P. Sm.) Kenney & D. B. Dunn, Parish's lupine, Perennial herb. Meadows, streams, canyon bottoms. 5300-7200 ft. Seven Oaks, vicinity of Jenks Lake, Fish Creek. *Mistretta* 3285.
- Lupinus lepidus*** Douglas ex. Lindl. var. ***confertus*** (Kellogg) C. P. Smith, clustered tidy lupine, Perennial herb. Uncommon in meadows and wet areas. 6700-

6800ft. Sugarloaf Meadow. *Soza 1435*.

***Lupinus polyphyllus*** Lindley var. ***burkei*** (S. Watson) C.L. Hitchc., meadow lupine, Perennial herb. Uncommon in moist meadows. 7500-8000 ft. South Fork, Lost Creek and Fish Creek. *Gross 3456*.

\****Medicago lupulina*** L., black medick, Perennial herb. Occasional in riparian areas, meadows. 5000-6700 ft. Seven Oaks, vicinity of Mile Creek, Camp Radford, Staircase Canyon, Sugarloaf Meadow, vicinity of South Fork Campground. *Fraga 2538*.

\****Melilotus albus*** Medikus, sweetclover, Annual to perennial herb. Occasional in moist areas along streams and meadow edges. 5000-6200 ft. Seven Oaks, Staircase Canyon, vicinity of South Fork Campground. *Fraga 2537*.

\****Melilotus indicus*** (L.) All., annual yellow sweetclover, Annual. Occasional in disturbed wet areas. 5500-6000 ft. Santa Ana River and Barton Creek. *Fraga 2899*.

***Melilotus officinalis*** (L.) Pall., yellow sweet clover, Biennial herb. Occasional in open disturbed areas. 8000-8400 ft. Vicinity of Sugarlump. *Stoughton 493*.

†***Oxytropis oreophila*** A. Gray, mountain oxytrope, Perennial herb. Uncommon on open talus slopes, usually above treeline. 9000-9900 ft. Ridgeline near summit of Sugarloaf Mountain. *Stoughton 594*.

†***Rupertia rigida*** (Parish) Grimes, Parish's California tea, Suffruticose perennial. Uncommon on slopes and benches under pines, open flats, in pine duff. 6500-7000 ft. Camp Ocoela, Wildhorse Canyon, South Fork, vicinity of Big Meadows, Fish Creek, Heart Bar. *Wood 998*.

***Trifolium microcephalum*** Pursh, small head field clover, Annual. Uncommon in moist places. 7500 ft. East Fork of Barton Creek. *Mistretta 4014*.

***Trifolium monanthum*** A. Gray var. ***grantianum*** (A. Heller) Parish, mountain carpet clover, Perennial herb. Occasional in meadows and beside streams. 7500-8500 ft. East Fork of Barton Creek, South Fork, Wildhorse Meadows, Mission Creek, Mission Springs Meadow. *Fraga 2959*.

***Trifolium variegatum*** Nutt., variegated clover, Annual. Uncommon in moist areas. 7000 ft. Vicinity of Barton Flats. *Mistretta 4133*.

***Trifolium wormskioldii*** Lehm., springbank clover, Perennial herb. Occasional in meadows and riparian areas. 6000-8400 ft. Sugarloaf Meadow, Lost Creek, Wildhorse Meadow, Fish Creek, Heart Bar, Cienega Seca Creek, Mission Springs Meadow. *Fraga 2546*.

***Vicia americana*** Willd. var. ***americana***, American vetch, Perennial herb. Occasional on open slopes, roadsides. 5500-7000 ft. Seven Oaks, Round Cienega Creek, Hathaway Flat, Barton Flats. *Mistretta 3719*.

\****Vicia villosa*** Roth, winter vetch, Annual. Uncommon in open areas. 4900 ft. Clarks Ranch. *Wood 2692*.



## FAGACEAE

- Chrysolepis sempervirens* (Kellogg) Hjelmq., bush chinquapin, Large shrub. Occasional in open areas in pine forest. 7500-9700 ft. Grand View Point, east ridgeline of Sugarloaf Mountain. *Mistretta* 3429.
- Quercus berberidifolia* Nutt., scrub oak, Large shrub. Occasional in Chaparral-oak woodland. 5500-7500 ft. Vicinity of Seven Oaks, Hamilton Creek, Radford Road, Burro Flats. *Mistretta* 3534.
- Quercus chrysolepis* Lieb., canyon live oak, Tree or large shrub. Common in oak woodland on slopes and flats. 5500-7500 ft. Flats, Barton Flats, Jenks Lake, Cienega Seca Creek. *Mistretta* 3540.
- Quercus kelloggii* Newb., California black oak, Tree. Occasional on slopes in mixed forest. 5000-7000 ft. Seven Oaks, Creek, Schneider Creek, Barton Flats, Jenks Lake, South Fork Campground, Wildhorse Canyon, Heart Bar. *Mistretta* 3693.
- Quercus wislizeni* A. DC. var. *frutescens* Engelm., interior live oak, Large shrub. Occasional in Chaparral-oak communities. 5000-7000 ft. Near Filaree Flat, Clarks Ranch, Creek. *Mistretta* 3703.
- Quercus x morehus* Kellogg, oracle oak, Tree. Rare in oak woodland and mixed forest communities. 6800 ft. Vicinity of Barton Flats. *Mistretta* 3588.
- Garrya flavescens* S. Watson var. *flavescens*, ashy silttassel, Large shrub. Occasional on slopes and flats in chaparral and oak woodland communities. 5000-7500 ft. Vicinity of Seven Oaks, Clark Grade, Radford Road, Wildhorse Canyon. *Mistretta* 3392.
- †*Gentiana fremontii* Torr., moss gentian, Annual. Uncommon in wet meadows. 7400-8000 ft. South Fork Meadow. *Bell* 1597.
- Gentianella amarella* (L.) Boerner subsp. *acuta* (Michaux) J. M. Gillett, autumn dwarf gentian, Annual. Uncommon in meadows and beside streams. 6500-8000 ft. Lost Creek, Fish Creek Meadows, Mission Springs Meadow. *Gross* 4199.
- Swertia parryi* (Torr.) Kuntze, Coahuila frasera, Perennial herb. Uncommon in dry open areas in chaparral and oak woodland communities. 5000-5700 ft. Seven Oaks, Flats, Burro Flats. *Mistretta* 3548.
- \**Erodium cicutarium* (L.) L'Her., redstem stork's bill, Annual. Occasional in open disturbed areas. 5000-6700 ft. Barton Flats, Barton Creek, South Fork Campground. *Gross* 3519.
- Geranium californicum* G. Jones & F. Jones, California cranesbill, Perennial herb. Meadows and moist areas adjacent to streams. 8600 ft. Wildhorse Meadows. *Wood* 72.
- Geranium richardsonii* Fischer & Trautv., Richardson's geranium, Perennial herb. Wet meadows, springs, seeps, and along streams. 6200-8400 ft. South

Fork Campground, Fish Creek, Wildhorse Canyon, Mission Springs Meadow, Cienega Seca Creek. *Fraga 2463*.

## GROSSULARIACEAE

***Ribes cereum*** Douglas var. ***cereum***, wax currant, Small shrub. Occasional in forest and woodland openings. 6800-9800 ft. Sugarloaf Mountain, Creek, Radford Road, vicinity of Jenks Lake, Lost Creek, Wildhorse Meadows, Cienega Seca Creek, Fish Creek, Coon Creek, Mission Springs Camp. *Fraga 3160*.

***Ribes montigenum*** McClatchie, mountain gooseberry, Small shrub. Uncommon in openings in pine forest. 9500 ft. Sugarloaf Peak. *Roos 2715*.

***Ribes nevadense*** Kellogg, mountain pink currant, Small shrub. Common in openings of forest and along streams. 5000-8000 ft. Seven Oaks, Mile Creek, Radford Road, Forsee Creek, Cold Creek, Staircase Canyon, Barton Flats, South Fork Campground, Fish Creek, Coon Creek, Cienega Seca Creek. *Gross 4114*.

***Ribes roezlii*** Regel var. ***roezlii***, Sierra gooseberry, Small shrub. Occasional in openings of pine forest. 5000-7700 ft. Seven Oaks, Round Cienega Creek, Clarks Grade, Mile Creek, Barton Flats. *Mistretta 3710*.

## HALORAGACEAE

***Myriophyllum aquaticum*** (Vell.) Verdc., parrot's feather, Aquatic perennial herb. Uncommon fully aquatic in ponded water. 6740 ft. Jenks Lake. *Wood 2260B*.

## JUGLANDACEAE

\****Juglans regia*** L., English walnut, Tree. Uncommon, persisting from cultivation. 4900 ft. Clarks Ranch. *Wood 2668A*.

## LAMIACEAE

\****Lamium amplexicaule*** L., henbit deadnettle, Annual. Uncommon in disturbed moist areas. 5500-6700 ft. Flats, Sugarloaf Meadow. *Fraga 2672*.

\****Marrubium vulgare*** L., horehound, Suffruticose perennial. Uncommon in openings and disturbed areas. 5600-5700 ft. In the vicinity of Flats and Camp Radford. *Mistretta 3898*.

***Mentha canadensis*** L., wild mint, Perennial herb. Occasional in wet areas along stream courses. 5500-7000 ft. Seven Oaks, South Fork Campground, Wildhorse Creek, Cienega Seca Creek. *Wood 1244*.

- \**Mentha spicata* L. var. *spicata*, spearmint, Perennial herb. Occasional in moist areas along streams. 5100-5300 ft. Vicinity of Seven Oaks. *Mistretta* 3344.
- Monardella australis* Abrams, southern monardella, Perennial herb. Occasional on dry slopes and rocky areas in open pine forests. 6000-9000 ft. Sugarloaf Mountain., Barton Flats, Wildhorse Canyon, Fish Creek, vicinity of Mission Creek. *Mistretta* 4046.
- Monardella breweri* A. Gray subsp. *lanceolata* (A. Gray ) A.C. Sanders & Elvin, mustang monardella, Annual. Occasional in moist areas along streams. 5100-5300 ft. Vicinity of Seven Oaks. *Mistretta* 3344.
- Monardella linoides* A. Gray, flaxleaf monardella, Perennial herb. Dry slopes and rocky areas in open pine forests. 6000-9000 ft. Wildhorse Spring, Fish Creek, vicinity of Heart Bar Peak, Coon Creek, Cienega Seca Creek, Grandview Point, Sugarlump, Sugarloaf Mountain, Stetson Creek, South Fork Campground, Wildhorse Canyon. Varieties difficult. Possible hybridization with *Monardella australis*, needs study. *Fraga* 3143.
- Prunella vulgaris* L. var. *lanceolata* (Barton) Fern., common selfheal, Perennial herb. Uncommon in wet meadows and creeks, roadside drainage. 5500-8000 ft. Seven Oaks, Barton Flats, East Fork of Barton Creek, Wildhorse Creek, Mission Springs Meadow. *Fraga* 2464.
- Pycnanthemum californicum* Torr., Sierra mint, Perennial herb. Uncommon in wet seeps and springy places. 5100-5300 ft. Vicinity of Seven Oaks., Clarks Ranch. *Mistretta* 4065.
- Salvia apiana* Jeps., white sage, Small shrub. Occasional on dry slopes in chaparral vegetation. 6100-6200 ft. Clarks Grade, Staircase Canyon. *Mistretta* 3930.
- Salvia columbariae* Benth., chia sage, Annual. Occasional on dry sunny slopes, disturbed places, burn areas. 5500-6500 ft. Rattlesnake Canyon, Burro Flats, Big Meadows. *Mistretta* 3641.
- Salvia pachyphylla* Epling ex Munz, blue sage, Small shrub. Occasional in openings of pine forest. 6000-8500 ft. Sugarlump, Sugarloaf Mountain, South Fork, Wildhorse Canyon, Fish Creek, Coon Creek, Mission Creek, Cienega Seca. *Fraga* 3140.
- Scutellaria siphocampyloides* Vatke, grayleaf skullcap, Perennial herb. Occasional in openings of mixed forest and in vernal wet areas adjacent to streams. 5500-6700 ft. Seven Oaks, Santa Ana River Trail, Forsee Creek Trail, Barton Flats, Jenks Lake. *Mistretta* 3256.
- Stachys ajugoides* Benth. var. *rigida* Jeps. & Hoov., rigid hedge nettle, Perennial herb. Uncommon in moist areas. 5000-5300 ft. Vicinity of Clarks Ranch. *Wood* 2673.
- Stachys albens* A. Gray, whitestem hedgenettle, Perennial herb. Occasional in moist areas beside streams and springs. 5500-8400 ft. Seven Oaks, Staircase Canyon, Barton Flats, Lost Creek, Wildhorse Canyon, Fish Creek, Cienega Seca Creek. *Gross* 4123.

***Trichostema parishii*** Vasey, Parish's bluecurls, Small shrub. Occasional in open grasslands and chaparral. 5000-7600 ft. Pinezanita, Forsee Creek, Round Cienega Creek, Clarks Grade, Seven Oaks, Flats, Hathaway Flat, Barton Flats. *Fraga* 2830.

## LAURACEAE

***Umbellularia californica*** (Hook. & Arn.) Nutt., California laurel, Tree. Uncommon in riparian forest. 5000-6000 ft. Vicinity of Seven Oaks. *Grant s.n.* (CAS).

## LINACEAE

***Linum lewisii*** Pursh var. *lewisii*, prairie flax, Perennial herb. Occasional in open gravelly slopes and flats. 6000-6700 ft. Vicinity of Burro Flats, Jenks Lake, Fish Creek, Coon Creek, Mission Creek. *Fraga* 2921.

## LOASACEAE

***Mentzelia dispersa*** S. Watson, bushy blazingstar, Annual. Occasional on dry slopes, burn areas. 6200-7700 ft. Clarks Grade, Creek, Barton Flats. *Mistretta* 3701.

***Mentzelia montana*** (Davidson) Davidson, variegated-bract blazingstar, Annual. Occasional on dry slopes and sunny openings. 5500-7500 ft. Seven Oaks, vicinity of Burro Flats, Cienega Seca Creek, and Radford Road. *White* 13212.

## MALVACEAE

***Malacothamnus fasciculatus*** (Nutt.) Greene, chaparral mallow, Small shrub. Occasional on dry open slopes in forests, and disturbed areas. 5000-7500 ft. Seven Oaks, Radford Road, flats, vicinity of Rattlesnake Canyon, road to Sugarloaf Meadow. *Fraga* 2527.

***Malacothamnus fremontii*** A. Gray, Fremon's bushmallow, Small shrub. Occasional on dry slopes and open areas. 6500-8800 ft. Wildhorse Canyon, Big Meadows, vicinity of Heart Bar Peak, Onyx Summit. *Wood* 999.

\****Malva parviflora*** L., cheeseweed mallow, Annual. Uncommon in irrigated areas. 5000 ft. Seven Oaks. *Wood* 2645.

†***Sidalcea hickmanii*** Greene var. *parishii* (Robinson) C.L. Hitchc., Parish's checkerbloom, Perennial herb. Rare in open areas in chaparral-pine forest transitions, often in recently burned forest. 5000-6000 ft. Along the Santa Ana River Trail in the vicinity of Pinezanita, Stetson Creek, Forsee Creek,

near Round Cienega Creek, vicinity of Seven Oaks, Barton Flats Road.  
*Fraga* 2804.

†*Sidalcea malviflora* (DC.) A. Gray subsp. *dolosa* C.L. Hitchc., dwarf checkerbloom, Perennial herb. Occasional in meadowy areas and along streams. 4900-8300 ft. Seven Oaks, Staircase Canyon, Horse Meadows, Wildhorse Creek. *Fraga* 3094.

*Sphaeralcea ambigua* A. Gray var. *ambigua*, apricot mallow, Suffruticose perennial. Occasional in dry sunny slopes and washes. 6200-7000 ft. Staircase Canyon, along road to Sugarloaf Meadow, Cienega Seca Creek. *White* 13220.

## MONTIACEAE

*Calyptridium monandrum* Nutt. in Torr. & A. Gray, common pussypaws, Annual. Occasional in sandy open places at lower elevations in the study area. 5700-5900 ft. Flat, Hathaway Flat, Burro Flats. *Mistretta* 3601.

*Calyptridium parryi* A. Gray var. *parryi*, Parry's pussypaws, Annual. Occasional on sandy slopes and flats, dry stream beds. 6300-8200 ft. South Fork, Cienega Seca Creek, Wildhorse Road, vicinity of Big Meadows, vicinity of Heart Bar Peak, headwaters of Heart Bar Creek, Coon Creek. *Fraga* 2747.

*Claytonia parviflora* Douglas ex Hook. subsp. *parviflora*, streambank springbeauty, Annual. Occasional in vernal moist places. 5200-5900 ft. Hamilton Creek, Burro Flats, Barton Creek. *Mistretta* 3596.

*Claytonia parviflora* Douglas ex Hook. subsp. *viridis* (Davidson) John M. Miller & Chambers, streambank springbeauty, Annual. Occasional on shaded slopes in forest understory. 5200-8100 ft. Flats, Hamilton Creek, Barton Creek, Hills Ranch Road, Hathaway Flat; near Camp Arbolado, Staircase Canyon; Burro Flats, vicinity of South Fork Campground; Lost Creek. *Mistretta* 3536.

*Claytonia perfoliata* D. Donn ex Willd. subsp. *mexicana* (Rydb.) J.D. Miller & K. L. Chambers, miner's lettuce, Annual. Occasional on shaded slopes. 5200-6900 ft. Creek; Hamilton Creek, Barton Creek, vicinity of Camp Arbolado. *Mistretta* 3568.

*Claytonia perfoliata* D. Donn ex Willd. subsp. *perfoliata*, miner's lettuce, Annual. Occasional on shaded slopes. 5700-6400 ft. Hamilton Creek, Barton Flats. *Mistretta* 3537.

*Claytonia rubra* (J. T. Howell) Tidestr. subsp. *rubra*, redstem springbeauty, Annual. Occasional in moist places in forests. 6000-8100 ft. Radford Road; Hills Ranch Road, Barton Flats, Jenks Lake, Lost Creek. *Mistretta* 3848.

*Lewisia rediviva* Pursh subsp. *minor* (Rydb.) Munz, bitter root, Geophyte. Uncommon in openings in rocky areas, pebble plains. 9632 ft. Sugarloaf Mountain, Wildhorse Road. *DeGroot* 6094.

**Montia chamissoi** (Sprengel) Greene, water minerslettuce, Perennial herb. Occasional in wet meadows. 6700-8400 ft. South Fork, Sugarloaf Meadow, Wildhorse Meadows. *White 13005*.

## NYCTAGINACEAE

†**Abronia nana** S. Watson subsp. **covillei** (Heimerl) Munz, Coville's dwarf abronia, Perennial herb. Uncommon on exposed ridgelines often on limestone substrates. 8600-8700 ft. Western ridgeline of Sugarloaf Mountain between Sugarlump Peak and Sugarloaf Summit, vicinity of Coon Creek. *Gross 4018*.

**Mirabilis laevis** (Benth.) Curran var. **crassifolia** (Choisy) Spellenb., wishbone bush, Suffruticose perennial. Occasional in openings on dry slopes. 5200-6400 ft. Seven Oaks, vicinity of Rattlesnake Canyon. *Mistretta 3520*.

**Mirabilis pumila** (Standley) Standley, dwarf four o'clock, Perennial herb. Occasional on dry slopes and sandy washes. 5000-7200 ft. Seven Oaks, Mile Creek, Wildhorse Canyon, Cienega Seca Creek. *White 12301*.

## OLEACEAE

\***Syringa vulgaris** L., common lilac, Large shrub. Rare and persisting from cultivation. 6000-6400 ft. Barton Flats Campground. *Mistretta 3736*.

## ONAGRACEAE

**Camissonia strigulosa** (Fisch. & C. A. Mey.) P. H. Raven, strigose suncup, Annual. Uncommon on open sandy areas. 6000-6200 ft. Staircase Canyon. *Mistretta 3925*.

**Camissoniopsis bistorta** (Torr. & A. Gray) W.L. Wagner & Hoch, California suncup, Annual. Occasional on open sandy slopes and washes. 5000-6500 ft. Seven Oaks, Camp Radford, vicinity of South Fork Campground. [*Camissonia bistorta* (Nutt. ex Torr. & A. Gray) P.H. Raven]. *White 7610*.

**Camissoniopsis confusa** (P.H. Raven) W.L. Wagner & Hoch, San Bernardino suncup, Annual. Occasional on dry slopes and rocky places. 5000-6500 ft. Seven Oaks, East Fork of Hamilton Creek, Staircase Canyon. [*Camissonia confusa* P.H. Raven]. *Mistretta 3926*.

**Camissoniopsis hirtella** (Greene) W.L. Wagner & Hoch, hairy suncup, Annual. Occasional on dry slopes, burn areas. 5700-7500 ft. Vicinity of Pinezanita, Flats, Radford Road, Barton Flats. [*Camissonia hirtella* (Greene) P.H. Raven]. *Mistretta 3377*.

- Camissoniopsis pallida* (Abrams) W.L. Wagner & Hoch subsp. *pallida*, pale suncup, Annual. Uncommon on open slopes and flats. 5600 ft. Vicinity of Burro Flats. [*Camissonia pallida* (Abrams) P.H. Raven]. *Mistretta* 3642.
- Chamerion angustifolium* (L.) Holub subsp. *circumvagum* (Mosquin) Hoch, fireweed, Perennial herb. Uncommon in stream banks. [*Epilobium angustifolium* L. subsp. *circumvagum* Mosquin] 6750 ft. Fish Creek. *Munz* 8520.
- Clarkia purpurea* (Curtis) A. Nelson & J. F. Macbr. subsp. *quadrivulnera* (Douglas ex Lindl.) F. H. Lewis & M. R. Lewis, winecup clarkia, Annual. Occasional on dry open hillsides. 5500-7800 ft. Round Cienega Creek, Creek, East Fork of Hamilton Creek, Staircase Canyon. *Mistretta* 3906.
- Clarkia rhomboidea* Douglas, diamond clarkia, Annual. Occasional on open dry slopes. 5500-6700 ft. Seven Oaks, Barton Creek, Jenks Lake. *Fraga* 2817.
- Epilobium brachycarpum* C. Presl, autumn willowweed, Annual. Occasional in meadows, stream sides, and sandy banks. 5500-7200 ft. Forsee Creek, Seven Oaks, South Fork Campground, Wildhorse Creek, South Fork, Fish Creek, Heart Bar, Cienega Seca Creek. *Gross* 3513.
- Epilobium canum* (Greene) P. H. Raven subsp. *latifolium* (Hook.) P. H. Raven, California fuchsia, Suffruticose perennial. Uncommon on open dry slopes and rocky places. 5500-8500 ft. Vicinity of Barton Flats, Forsee Creek, Seven Oaks, Frog Creek, Sugarlump Peak, Sugarloaf Meadow, and Wildhorse Creek. *Mistretta* 4037.
- Epilobium ciliatum* Raf. subsp. *ciliatum*, fringed willowherb, Perennial herb. Wet meadows, seeps, springs and along creeks. 5200-8400 ft. Hamilton Creek, Rattlesnake Creek, Staircase Canyon, East Fork of Barton Creek, Jenks Lake, South Fork, Wildhorse Creek, Big Meadows,. *Fraga* 2323.
- Epilobium ciliatum* Raf. subsp. *glandulosum* (Lehmann) Hoch & P.H. Raven, fringed willowherb, Perennial herb. Occasional in meadows and along creek banks. 6500-7500 ft. Jenks Lake Road, South Fork, Lost Creek, Wildhorse Creek. *Mistretta* 3290.
- Epilobium glaberrimum* Barbey subsp. *glaberrimum*, glaucous willowherb, Perennial herb. Occasional along creeks and streams. 5500-7800 ft. Seven Oaks, Clarks Grade, Mile Creek, Jenks Lake, South Fork, Lost Creek, vicinity of Poopout Hill, Wildhorse Creek, North Fork of Mission Creek. *Gross* 4183.
- Epilobium halleanum* Hausskn., Hall's willowherb, glandular willowherb, Perennial herb. Uncommon in moist areas. 6500-7200 ft. Wildhorse Creek, Heart Bar, Cienega Seca Creek. *Wood* 1240.
- Epilobium oregonense* Hausskn., Oregon willowherb, Perennial herb. Occasional in wet meadows. 6600-8400 ft. Wildhorse Meadows, Big Meadows, Fish Creek. *White* 12358.
- Gayophytum diffusum* Torr. & A. Gray subsp. *parviflorum* F. H. Lewis & M. R. Lewis, diffuse gayophytum, Annual. Common in openings in pine forests.

5700-8500 ft. Vicinity of Sugarlump Peak, Flats, East Fork of Hamilton Creek, Radford Road, Barton Flats, Wildhorse Creek, Big Meadows, Fish Creek, Cienega Seca Creek. *Fraga* 2326.

***Oenothera californica*** S. Watson subsp. *californica*, California evening primrose, Perennial herb. Occasional on dry slopes and sandy washes. 5500-7800 ft. Seven Oaks, Flat, Staircase Canyon, Barton Flats, South Fork Campground, Big Meadows, Coon Creek, Cienega Seca Creek. *De Groot* 6128.

***Oenothera elata*** Kunth subsp. *hirsutissima* (A. Gray ex S. Watson) W. Dietr., Hooker's evening primrose, Perennial herb. Uncommon in meadows, seeps and along streams. 5000-7100 ft. Seven Oaks, Jenks Lake Road, Big Meadows. *Mistretta* 3292.

## OROBANCHACEAE

***Boschniakia strobilacea*** A. Gray, California groundcone, Parasitic perennial herb. Uncommon in openings of pine forest, often parasitic on *Arctostaphylos*. 7200-8000 ft. Vicinity of Clark's Summit, Wildhorse Canyon Trail, road to Fish Creek Meadows. *Fraga* 2986.

***Castilleja linariifolia*** Benth., Linaria-leaved Indian Paintbrush, Parasitic perennial herb. Occasional on open slopes and benches above streams. 5500-8700 ft. West ridgeline of Sugarloaf Mountain, Staircase Canyon, Fish Creek Rd, Mission Creek. *De Groot* 6235.

***Castilleja applegatei*** Fern. subsp. *martinii* (Abrams) T. I. Chuang & Heckard, wavyleaf Indian paintbrush, Parasitic perennial herb. Common on slopes in pine forest understory. 5200-9900 ft. Sugarlump Peak, Sugarloaf Mountain, Forsee Creek Trail, Creek, Radford Road, Rattlesnake Canyon, Heart Bar Creek, Jenks Lake, Wildhorse Creek, Heart Bar, Coon Creek, Cienega Seca. *Fraga* 2927.

†***Castilleja cinerea*** A. N, ash gray paintbrush, Parasitic perennial herb. Occasional on open rocky areas and pebble plains. 8000-9950 ft. Sugarloaf Mountain, Wildhorse Canyon, Heart Bar Peak. *Stoughton* 422.

***Castilleja chromosa*** (Nutt.) G. Don, desert paintbrush, Parasitic perennial herb. Uncommon on dry slopes. 9000 ft. Vicinity of Wildhorse Meadow Heart Bar and Onyx Peak. *Wood* 1062.

***Castilleja miniata*** Hook. subsp. *miniata*, scarlet paintbrush, Parasitic annual. Common in meadows and along streams. 5200-8400 ft. Round Cienega Creek, Forsee Creek Trail, Bellyache Springs, Staircase Canyon, Barton Creek, Jenks Lake, Wildhorse Canyon, Big Meadows, Heart Bar, Fish Creek, Coon Creek, Cienega Seca Creek, Mission Springs. *De Groot* 6117.

***Castilleja minor*** (A. Gray) A. Gray subsp. *spiralis* (Jeps.) T. I. Chuang & Heckard, lesser paintbrush, Parasitic annual. Occasional in moist areas near streams. 5500-7200 ft. Seven Oaks, Lost Creek, Wildhorse Creek. *White* 13383.



- †*Castilleja montigena* Heckard, Heckard's Indian paintbrush, Parasitic perennial herb. Occasional on slopes in the understory of pine forest. 5500-9500 ft. Seven Oaks, vicinity of South Fork Campground, Heart Bar, east ridgeline of Sugarloaf Mountain, Coon Creek. *Gross* 1137.
- Cordylanthus nevinii* A. Gray, Nevin's bird's beak, Parasitic annual. Occasional on dry slopes and flats in open forests. 6000-8800 ft. Forsee creek, Rattlesnake Creek, Jenks Lake, South Fork, Wildhorse Canyon, Fish Creek, vicinity of Heart Bar Peak, Cienega Seca Creek. *Fraga* 2390.
- Cordylanthus rigidus* (Benth.) Jeps. subsp. *setiger* T. I. Chuang & Heckard, rigid bird's beak, Parasitic annual. Occasional on slopes in chaparral communities. 6500-6800 ft. Clarks Grade, vicinity of Jenks Lake. *Mistretta* 3308.
- Orobanche bulbosa* Beck, chaparral broomrape, Parasitic perennial herb. Uncommon in openings of chaparral, possibly parasitic on *Adenostoma fasciculatum*. 5700 ft. Front Line Road, vicinity of Flat. *Fraga* 2846.
- Orobanche californica* Cham. & Schlecht. subsp. *feudgei* (Munz) Heckard, California broomrape, Parasitic perennial herb. Occasional in open areas of mixed forest, parasitic on *Artemisia*. 6000-8200 ft. Vicinity of Coon Creek, Cienega Seca Creek, Onyx Summit, Santa Ana Canyon. *Fraga* 3731.
- Orobanche fasciculata* Nutt., clustered broomrape, Parasitic perennial herb. Occasional in open areas; parasitic on *Artemisia*, *Eriodictyon*, and *Eriogonum*. 5600-8200 ft. West ridgeline of Sugarloaf Mountain, Wildhorse Road, vicinity of Heart Bar Peak, Cienega Seca. *Gross* 4019.
- Orobanche parishii* (Jeps.) Heckard subsp. *parishii*, Parish's broomrape, Parasitic annual. Uncommon on open slopes in montane chaparral on *Ericameria*. 7800 ft. Vicinity of Clarks Summit. Stoughton 584.
- Pedicularis semibarbata* A. Hook., pinewoods lousewort, Perennial herb. Common on open slopes and flats under pines. 6500-9100 ft. Radford Road., Vicinity of Barton Flats, Wildhorse Meadows, Big Meadows, east ridgeline of Sugarloaf Mountain. *Fraga* 2663.

## PAPAVERACEAE

- Argemone munita* Durand & Hilg., prickly poppy, chicalote, Annual to perennial herb. Occasional in dry, open, disturbed areas and roadsides. 7100-7600 ft. Radford Road, Clarks Grade, Cienega Seca Creek, Coon Creek. *De Groot* 6147.
- Dicentra chrysantha* (Hook. & Arn.) Walp., golden eardrops, Suffruticose perennial. Uncommon in open disturbed areas. 6000-7600 ft. Radford Road, Seven Oaks Road. *Mistretta* 3395.

\**Papaver rhoeas* L., corn poppy, Annual. Scarce escaped cultivar on roadside. 6400 ft. Vicinity of Barton Flats. *Wood* 2228.

## PHRYMACEAE

*Mimulus androsaceus* Greene, rockjasmine monkeyflower, Annual. Uncommon in vernal moist areas in pine forest. 6300 ft. Vicinity of Barton Flats. *Fraga* 3440.

*Mimulus aurantiacus* Curtis, sticky bush monkeyflower, Small shrub. Uncommon on open slopes. 5800-6900 ft. Vicinity of Clarks Grade. *Stoughton* 611.

*Mimulus brevipes* Benth., wide throated yellow monkeyflower, Annual. Occasional in open areas in chaparral and recently burned areas. 5000-6500 ft. Middle Control Road, Hathaway Flat, vicinity of Burro Flats, and South Fork Campground. *Gross* 4003.

*Mimulus breweri* (Greene) Cov., Brewer's monkeyflower, Annual. Occasional in vernal moist areas. 7000-7500 ft. Heart Bar Creek, Cienega Seca Creek. *Wood* 539.

*Mimulus cardinalis* Benth., scarlet monkeyflower, Perennial herb. Occasional along seeps, springs and moist areas along creeks. 5500-6500 ft. Middle Control Road, Santa Ana River, Barton Creek, Staircase Canyon, Fish Creek. *Gross* 4159.

†*Mimulus exiguus* A. Gray, eye-strain monkeyflower, Annual. Rare on vernal moist depression and streams. 6900-8800 ft. Wildhorse Spring and Vicinity of Heart Bar and Big Meadows. *Fraga* 3556.

*Mimulus floribundus* Douglas ex Lindl., floriferous monkeyflower, Annual. Occasional along sandy edges in moist places along streams. 6000-7000 ft. Clarks Grade, Heart Bar. *Fraga* 3659.

*Mimulus fremontii* (Benth.) A. Gray, Fremont's monkeyflower, Annual. Uncommon in open areas of chaparral. 4600 ft. Just east of Filaree Flat. *Fraga* 3430.

*Mimulus guttatus* DC., common yellow monkeyflower, seep monkeyflower, Annual or perennial herb. Common in wet places along streams and seeps. 6300-8800 ft. Barton Flats, East Fork of Barton Creek, Sugarloaf Meadow, Wildhorse Meadows, Cienega Seca Creek. *Fraga* 2437.

*Mimulus moschatus* Lindley, musk monkeyflower, Perennial herb. Occasional in meadows, streams, springs and other wet places. 6500-8000 ft. Mile Creek, vicinity of Jenks Lake, Wildhorse Creek, Mission Creek. *Fraga* 2978.

*Mimulus parishii* Greene, Parish's monkeyflower, Annual. Uncommon in moist sandy places. 7500 ft. Big Meadows, Cienega Seca Creek, Coon Creek. *Fraga* 3668.

- Mimulus pilosus*** (Benth.) S. Watson, downy monkeyflower, Annual. Occasional in moist sandy benches and creeks. 6100-6800 ft. Vicinity of South Fork Campground, Big Meadows. *Gross 3517*.
- Mimulus primuloides*** Benth. subsp. *primuloides*, primrose monkeyflower, Perennial herb. Occasional in wet meadows and other springy areas with saturated ground. 8000-8800 ft. Wildhorse Meadows, Mission Springs Meadow. *Fraga 2967*.
- Mimulus rubellus*** A. Gray, redstemmed monkeyflower, Annual. Uncommon on mesic slopes and flats. 5700-8500 ft. Heart Bar Creek, Staircase Canyon and Jenks Lake. *Fraga 3485*.
- Mimulus suksdorfii*** A. Gray, Suksdorf's monkeyflower, Annual. Occasional in vernal moist areas. 6800-8400 ft. Wildhorse Meadows, Big Meadows. *Gross 3469*.
- Mimulus tilingii*** Regel, larger mountain monkeyflower, Perennial herb. Occasional in meadows, wet banks, and stream edges. 5500-8500 ft. Mile Creek, Barton Creek, east of Jenks Lake, Wildhorse Meadows, Lightning Gulch, Fish Creek. *Gross 4155*.

## PLANTAGINACEAE

- Antirrhinum coulterianum*** Benth. in DC., Coulter's snapdragon, Annual. Uncommon in openings of chaparral and recently burn areas. 5200-6500 ft. Vicinity of Seven Oaks, Flats, Staircase Canyon, Rattlesnake Creek, Hathaway Flat, Barton Flats. *Mistretta 3948*.
- Collinsia parryi*** A. Gray, Parry's blue eyed Mary, Annual. Occasional in openings within chaparral, and pine-oak woodland. 4900-5800 ft. Round Cienega Creek, Seven Oaks, Camp Radford. *Fraga 2771*.
- Collinsia parviflora*** Douglas, small flowered blue eyed Mary, Annual. Occasional at edges of meadow, moist places in understory of pines. 6300-6700 ft. Mouth of the South Fork River, vicinity of Barton Flats, and Sugarloaf Meadow. *Fraga 2676*.
- Collinsia torreyi*** A. Gray var. *wrightii* (S. Watson) I.M. Johnston., Wright's blue eyed Mary., Annual. Uncommon in open areas in pine forest. Wildhorse Canyon. *Mistretta 5499*.
- Keckiella ternata*** (Torr. ex A. Gray ) Straw var. *ternata*, scarlet keckiella, Small shrub. Occasional on dry slopes and banks in chaparral. 5000-7500 ft. Forsee Creek, vicinity of Seven Oaks, Radford Road. *Mistretta 3368a*.
- Penstemon caesius*** A. Gray, San Bernardino beardtongue, Perennial herb. Occasional on slopes in pine forest understory. 6500-9950 ft. Clarks Grade, Grandview Point, Barton Flats, Heart Bar Creek, Wildhorse Creek, east ridgeline of Sugarloaf Mountain., Coon Creek, Mission Springs Campground. *Fraga 2928*.

- Penstemon grinnellii*** Eastw. x ***Penstemon spectabilis*** Thurb. ex A. Gray, Suffruticose perennial. Rare on open slopes in chaparral. 5300 ft. Clarks Grade. *Gross 4005*.
- Penstemon grinnellii*** Eastw. subsp. ***grinnellii***, Grinnell's beardtongue, Suffruticose perennial. Occasional on open slopes in forests. 5700-8800 ft. Clarks Grade, Sugarlump Peak, Kilpecker Creek, Pinezanita, Radford Road, Barton Flats, Cienega Seca. *De Groot 6052*.
- Penstemon labrosus*** (A. Gray) Hook. San Gabriel beardtongue, Perennial herb. Occasional in forest understory. 5000-8800 ft. Seven Oaks, Barton Flats, Wildhorse Creek, Lightning Gulch, Big Meadows, Heart Bar, Cienega Seca Creek, Coon Creek, Mission Creek. *Wood 1068*.
- Penstemon rostriflorus*** Kellogg, beaked penstemon, Suffruticose perennial. Occasional on dry slopes in forest understory. 6000-8000 ft. Forsee Creek Trail, near Seven Oaks, Wildhorse Creek, Cienega Seca Creek, vicinity of Heart Bar Peak. *White 13221b*.
- Penstemon spectabilis*** Thurb. subsp. ***spectabilis***, showy penstemon, Suffruticose perennial. Occasional in openings of oaks woodland and chaparral. 5000-5800 ft. Round Cienega Creek, Clarks Grade, flats. *Mistretta 3798*.
- \****Plantago lanceolata*** L., narrowleaf plantain, Perennial herb. Uncommon in moist areas. 5000-8000 ft. Cienega Seca Creek and vicinity of Filaree Flat. *Wood 1146*.
- \****Plantago major*** L., common plantain, Perennial herb. Occasional in disturbed areas. 7000-8000 ft. Cienega Seca Creek. *Wood 1145*.
- Veronica americana*** (Raf.) Schwein., American speedwell, Perennial herb. Occasional in wet places along streams. 5200-8400 ft. Vicinity of Seven Oaks, Rattlesnake Creek, South Fork Campground, Sugarloaf Meadow, Wildhorse Meadows, Heart Bar, Fish Creek, Cienega Seca Creek, Mission Creek. *Gross 3500*.
- \****Veronica anagallis-aquatica*** L., water speedwell, Biennial herb. Occasional in wet places along streams. 5500-6100 ft. Seven Oaks, Stetson Creek, east of Burro Flats. *Fraga 2917*.
- Veronica peregrina*** L. subsp. ***xalapensis*** (Kunth) Pennell, hairy purslane speedwell, Annual. Occasional in meadows and moist places. 6800-8400 ft. Wildhorse Meadows, Big Meadows, Mission Springs Meadows. *Gross 3468*.
- Veronica serpyllifolia*** L. subsp. ***humifusa*** (Dickson) Syme, bright blue speedwell, Perennial herb. Occasional in meadows, creek banks, and other moist places. 5500-8400 ft. East Fork of Barton Creek, Barton Flats Campground, east of Burro Flats, Wildhorse Meadows, Fish Creek, Mission Springs Meadow. *Fraga 2916*.
- Platanus racemosa*** Nutt., western sycamore, Tree. Uncommon in riparian woodland 4900 ft. Clarks Ranch. *Wood 2666*.

## POLEMONIACEAE

- Allophyllum gilioides* (Benth.) A. D. Grant & V. E. Grant subsp. *violaceum* (A. Heller) A. G. Day, dense false gilia, Annual. Occasional in openings under pines. 5700-8000 ft. Round Cienega Creek, Radford Road, Barton Flats, Jenks Lake and between Jenks Lake and Horse Meadows, Wildhorse Road. *Mistretta* 3822.
- Collomia grandiflora* Douglas ex Lindl., mountain collomia, Annual. Uncommon in openings of mixed oak woodland. 5200 ft. Seven Oaks. *Wood* 2155.
- Eriastrum densifolium* (Benth.) H. Mason subsp. *austromontanum* (T. T. Craig) H. Mason, southern mountain wollystar, Suffruticose perennial. Occasional on dry slopes, under pines, washes, roadsides, and open areas. 5000-7800 ft. Barton Flats, Cienega Seca, Greyback Amphitheatre, Fish Creek, Middle Control Road, Seven Oaks. *Mistretta* 3353.
- Eriastrum sapphirinum* (Eastw.) H. Mason subsp. *dasyanthum* (Brand) H. Mason, sapphire wollystar, Annual. Occasional in open areas under pines. 5000-7800 ft. Seven Oaks, Coon Creek, Heart Bar. *Fraga* 3139.
- Eriastrum sparsiflorum* (Eastw.) H. Mason, Few flowered wollystar, Annual. Open and disturbed areas. 6500-8400 ft. Sugarloaf Mountain, Sugarloaf Meadow, Burro Flats. *Fraga* 2456.
- Gilia brecciarum* M. E. Jones subsp. *brecciarum*, Nevada gilia, Annual. Uncommon in mixed forest understory. 6500-6600 ft. In the vicinity of Barton Flats. *Fraga* 3402.
- Gilia capitata* Sims, bluehead gilia, Annual. Occasional on open slopes and flats in chaparral and oak woodland. 4600-7500 ft. Near Clarks Grade and Radford Road. *Fraga* 3422.
- Gilia diegensis* (Munz) A. D. Grant & V. E. Grant, coastal gilia, Annual. Occasional in sandy areas, open forest. 4900-6000 ft. Vicinity of Seven Oaks, Flat, Rattlesnake Canyon. *Fraga* 2778.
- Gilia interior* (H. Mason & A. D. Grant) A. D. Grant & V. Grant, inland gilia, Annual. Uncommon in openings in sandy soils mixed forest. 6900-7000 ft. From one location at the South Fork Trail. Stoughton 254.
- †*Gilia leptantha* Parish subsp. *leptantha*, fine flower gilia, Annual. Common on open sunny slopes and flats, and open areas in pine forests. 6000-8500 ft. Vicinity of Cienega Seca, Wildhorse Canyon trail, Heart Bar, Coon Creek, Front Line Road. *Fraga* 2749.
- Gilia modocensis* Eastw., Modoc gilia, Annual. Occasional on slopes and open areas under pines. 5600-7800 ft. East of Camp Radford, Round Cienega Creek; East Fork of Hamilton Creek, Staircase Canyon, north of Greyback Amphitheatre, vicinity of South Fork Campground, road to Sugarloaf Meadow, Big Meadows, Fish Creek. *Gross* 3992.

- Gilia ochroleuca*** M. E. Jones subsp. *exilis* (A. Gray ) A. D. Grant & V. E. Grant, volcanic gilia, Annual. Uncommon on open slopes. 7100 ft. Vicinity of Skyline Group Camp. *Honer* 3527.
- Gilia sinuata*** Benth., rosy gilia, Annual. Uncommon on open sandy areas, clearings in chaparral. 5200-7000 ft. Barton Creek, Barton Flats, Burro Flats, Coon Creek. *Mistretta* 3632.
- Leptosiphon breviculus*** (A. Gray ) J.M. Porter & L.A. Johnson, Mojave linanthus, Annual. Common in open areas beneath pines. 5400-9800 ft. Common throughout the study area. *Gross* 3993.
- Leptosiphon ciliatus*** (Benth.) Jeps., whisker brush linanthus, Annual. Uncommon in moist open places. 5700-6900 ft. Round Cienega Creek, Heart Bar Ranger Station. *Mistretta* 3808.
- Leptosiphon floribundus*** (A. Gray ) J.M. Porter & L.A. Johnson subsp. *floribundus*, manyflower linanthus, Suffruticose perennial. Uncommon on open slopes, roadsides. 5000-6800 ft. Stetson Creek, Hathaway Flat, in the vicinity of Barton Flats, vicinity of Jenks Lake, near Camp Round Meadow. *White* 2396 (UCR).
- Leptosiphon nuttallii*** (A. Gray ) J.M. Porter & L.A. Johnson, Nuttall's linanthus, Suffruticose perennial. Occasional in mixed woodland and openings in pine forests. 4900-6000 ft. Middle Control Road in the vicinity of Pinezanita, Seven Oaks, Barton Flats. *Fraga* 2796.
- Linanthus pungens*** (Torr.) J.M. Porter & L.A. Johnson, granite gilia, Perennial herb. Occasional on rocky slopes and flats. 6200-9200 ft. Radford Road; Rattlesnake Creek, east of Greyback Amphitheatre, vicinity of South Fork Campground, east ridgeline of Sugarloaf Mountain, Wildhorse Meadows, Cienega Seca Creek, Heart Bar; Coon Creek, vicinity of Mission Creek. *Fraga* 2668.
- Phlox austromontana*** Cov., mountain phlox, Perennial herb. Uncommon in open areas. 6000-8700 ft. Round Cienega Seca Creek; Forsee Creek Trail, Wildhorse Meadow. *White* 12959.
- Phlox condensata*** (A. Gray ) E. Nelson, condensed phlox, Perennial herb. Uncommon on pebble plains along ridgeline. 8650 ft. West ridgeline of Sugarloaf Mountain. *Gross* 4015.
- † ***Phlox dolichantha*** A. Gray, Big Bear Valley phlox, Perennial herb. On slopes under pines. 7700-8800 ft. Western and eastern ridgeline of Sugarloaf Mountain, west slopes of Staircase Canyon. *Gross* 4010.
- Phlox gracilis*** (Hook.) Greene, annual phlox, Annual. Common in open pine forests, and margins of meadows. 5500-9100 ft. Flats, Barton Flats, South Fork, Sugarloaf Meadow, east ridgeline of Sugarloaf Mountain, Wildhorse Meadow, Wildhorse Road. *Fraga* 2666.
- Polemonium occidentale*** Greene, western sky pilot, Perennial herb. Uncommon in meadow. 7600-7700 ft. Vicinity of Poopout Hill. *Gross* 3481.

***Saltugilia splendens*** (Douglas ex H. Mason & A.D. Grant) L.A.Johnson subsp. ***splendens***, grand gilia, Annual. Occasional in open areas of pine forest. 5000-8200 ft. Seven Oaks; Middle Control Road; Creek; west slopes of Staircase Canyon, Barton Flats, Jenks Lake; vicinity of South Fork Campground; Wildhorse Road, vicinity of Lightning Gulch, Cienega Seca Creek; Fish Creek. *Fraga* 2528.

## POLYGONACEAE

†***Acanthoscyphus parishii*** (Parry) Small var. ***cienegensis*** (Ertter) Reveal, Cienega Seca oxytheca, Annual. Occasional on sandy granitic soils on slopes, wash bottoms, and along trails and roadsides. 6600-8200 ft. Wildhorse Canyon Trail; Cienega Seca Creek, vicinity of Hear Bar, Coon Creek, North Fork Mission Creek and vicinity of Mission Springs Campground. *Fraga* 3032.

†***Acanthoscyphus parishii*** Parry var. ***parishii***, Parish's oxytheca, Annual. Uncommon on sandy soils, roadside. 5800-5900 ft. Vicinity of Cold Creek, Kilpecker Creek, near Barton Flats. *Wood* 1284.

***Eriogonum davidsonii*** Greene, Davidson's buckwheat, Annual. Common in open areas. 5500-8200 ft. Heart Bar, Coon Creek, Seven Oaks, Santa Ana Canyon. *Mistretta* 3522.

***Eriogonum elongatum*** Benth. var. ***elongatum***, long stemmed buckwheat, Suffruticose perennial. Occasional on exposed sunny slopes. 7534 ft. Radford Road, Santa Ana Canyon. *Mistretta* 3384.

***Eriogonum fasciculatum*** Benth. var. ***polifolium*** (Benth. in A. DC.) Torr. & A. Gray, California buckwheat, Small shrub. Common on dry open slopes and disturbed areas. 5500-6500 ft. Seven Oaks, Round Cienega Creek, Barton Creek, Cienega Seca Creek. *Mistretta* 3797.

***Eriogonum gracile*** Benth., slender woolly buckwheat, Annual. Occasional in sandy soil in mixed woodland/chaparral transition zones. Santa Ana Canyon near Seven Oaks and Frontline Road. 5000-6000 ft. *Fraga* 3708.

†***Eriogonum kennedyi*** S. Watson var. ***alpigenum*** (Munz & I.M.Johnst.) Munz & I.M.Johnst., southern alpine buckwheat, Perennial herb. Rare near the summit in open areas. 9952 ft. Sugarloaf Peak. (plants on Sugarloaf Mountain may need additional study). *Gross* 37.

†***Eriogonum kennedyi*** S. Watson var. ***austromontanum*** Munz & I.M.Johnst., southern mountain buckwheat, Perennial herb. Uncommon in open areas. 6000-9900 ft. Vicinity of Barton Flats, near summit of Sugarloaf Mountain. (plants on Sugarloaf Mountain may need additional study). *Bell* 1870.

†***Eriogonum microthecum*** Nutt. var. ***corymbosoides*** Reveal, San Bernardino buckwheat, Small shrub. Occasional on carbonate slopes. 8500-8700 ft. West ridgeline of Sugarloaf Mountain and vicinity of Coon Creek. *De Groot* 6222.

- Eriogonum molestum*** Greene, pineland buckwheat, Annual. Occasional in open areas of mixed forests and oak woodland. 6000-6800 ft. Near Barton Flats, Big Meadows. *Cooper* 2899.
- Eriogonum nudum*** Douglas ex Benth. var. *pauciflorum* S. Watson, naked buckwheat, Perennial herb. Occasional on open dry slopes and flats. 5200-6000 ft. Seven Oaks, Barton Flats, mouth of Lost Creek. *Mistretta* 4054.
- Eriogonum parishii*** S. Watson, Parish's buckwheat, mountainmist, Annual. Common on dry slopes, and disturbed areas. 5000-7700 ft. Forsee Creek Trail, Stetson Creek, Barton Flats, Jenks Lake, South Fork Campground, Wildhorse Road, Cienega Seca Creek, Big Meadows, Heart Bar. *Fraga* 2328.
- Eriogonum saxatile*** S. Watson, hoary buckwheat, Perennial herb. Occasional on dry rocky slopes, under pines. 6000-7600 ft. Near Seven Oaks; vicinity of Grand View Point; East Fork of Hamilton Creek, Wildhorse Road, Cienega Seca Creek, canyon above Big Meadows. *White* 13184.
- Eriogonum umbellatum*** Torr. var. *munzii* Reveal, Munz's buckwheat, Small shrub. Occasional on open dry slopes and flats. 6500-9000 ft. West and east ridgeline of Sugarloaf Mountain; Wildhorse Canyon, Cienega Seca Creek, Heart Bar Peak, Coon Creek. *Fraga* 3138.
- Eriogonum wrightii*** Benth. var. *subscaposum* S. Watson, Wright's buckwheat, bastardsage, Small shrub. Common on open dry sunny slopes and flats, pebble plains. 5500-9950 ft. Sugarloaf Mountain. summit and ridgeline; Seven Oaks, Radford Road, Rattlesnake Creek, Cienega Seca Creek, ridge east of Heart Bar Peak, Coon Creek. *Fraga* 3142.
- Persicaria amphibia*** (L.) Gray, water knotweed, Perennial herb. Uncommon in standing water. 6500 ft. Barton Flats and Jenks Lake. *Wood* 2227.
- \****Polygonum aviculare*** L. subsp. *depressum* (Meisn.) Arcang., common knotweed, Perennial herb. Occasional in disturbed areas, roadsides. 7000-7500 ft. Vicinity of Radford Road. *Mistretta* 3379.
- Polygonum bistortoides*** Pursh, mountain meadow knotweed, Perennial herb. Uncommon in a wet meadow. 7700-7800 ft. South Fork of Santa Ana River. *Bell* 1594.
- Polygonum douglasii*** Greene, Douglas' knotweed, Annual. Occasional in wet meadows springy areas. 5700-8400 ft. Round Cienega Creek; vicinity of South Fork Campground; South Fork, Wildhorse Meadows, Wildhorse Road. Many plants are intermediate between subsp. *douglasii* and subsp. *johnstonii*, but plants may grow together without local integradation. *Fraga* 2602.
- \****Rumex conglomeratus*** Murray, clustered dock, Perennial herb. Occasional in wet areas beside river. 5200 ft. Vicinity of Seven Oaks. *Fraga* 3130.
- \****Rumex crispus*** L., curly dock, Perennial herb. Occasional in meadows and along rivers. 5100-6300 ft. Vicinity of Seven Oaks, Barton Flats. *Mistretta* 3339a.
- Rumex maritimus*** L., golden dock, Annual. Rare at lake margin 6400 ft. Vicinity of Barton Flats. *Wood* 2432.



- Rumex salicifolius*** Weinm. var. *denticulatus* Torr., willow dock, Perennial herb. Uncommon in wet places along creeks. 5200-6500 ft. Barton Creek, Lost Creek, Fish Creek. "Except for tubercules very much like var. *salicifolius*". *Mistretta 4094*.
- Rumex salicifolius*** Weinm. var. *salicifolius*, willow dock, Perennial herb. Occasional in wet meadows. 7800-8000 ft. Wildhorse Creek, Big Meadows. *Wood 1032*.

## RANUNCULACEAE

- †***Actaea rubra*** (Aiton) Willd., red baneberry, Perennial herb. Uncommon in shady meadowy areas and along streams. 6500-7500 ft. Forsee Creek Trail, Barton Flats Spring; East Fork of Barton Creek, one mile ESE of Jenks Lake, South Fork, Lost Creek; Fish Creek. *Mistretta 4126*.
- Aquilegia formosa*** Fisch., western columbine, Perennial herb. Occasional in moist stream sides and meadows. 5000-7700 ft. Seven Oaks, Mile Creek, Barton Flats, East Fork of Barton Creek, Jenks Lake, Wildhorse Creek, Cienega Seca Creek, Fish Creek. *Gross 4158*.
- Clematis ligusticifolia*** Nutt. in Torr. & A. Gray, western white clematis, Liana. Occasional climbing vine in moist areas along creeks. 5000-7800 ft. Pinezanita, vicinity of Seven Oaks, Staircase Canyon, Rattlesnake Creek, Lost Creek, Cienega Seca Creek, Coon Creek. *Mistretta 4059*.
- Delphinium parryi*** A. Gray subsp. *parryi*, San Bernardino larkspur, Geophyte. Uncommon on slopes and flats in open pine forests and chaparral. 5000-6700 ft. Seven Oaks; vicinity of Burro Flats, near San Gorgonio Campground. *Mistretta 3920*.
- Delphinium patens*** Benth. subsp. *montanum* (Munz) Ewan, spreading larkspur, Geophyte. Uncommon in open areas under pines. 5000-7000 ft. Forsee Creek; Creek, vicinity of Barton Flats, Jenks Lake, South Fork, near Big Meadows. *Fraga 2785*.
- Ranunculus aquatilis*** L. var. *capillaceus* (Thuill.) DC., whitewater crowfoot, Aquatic perennial herb. Uncommon aquatic plant in standing water. 6500 ft. Jenks Lake. *Munz 11925*.
- Ranunculus cymbalaria*** Pursh subsp. *saximontanus* (Fernald) Thorne, alkali buttercup, Perennial herb. Uncommon along creeks and in meadows, dry slopes and flats. 6000-8000 ft. South Fork Campground; Big Meadows, Cienega Seca, Heart Bar, Fish Creek, Mission Springs Campground. *Gross 3498*.
- \****Ranunculus testiculatus*** Crantz, tubercled crowfoot, Annual. Uncommon in open moist areas. 5350 ft. Vicinity of Barton Flats Campground. *Fraga 3393*.
- Thalictrum fendleri*** A. Gray var. *fendleri*, Fendler's meadow-rue, Perennial herb. Uncommon in shady areas along streams. 6500-7300 ft. Barton Flats

Campground, Cienega Seca Creek, Fish Creek. *White 13168.*

***Thalictrum sparsiflorum*** Fischer & C. Meyer, Mountain meadow-rue, Perennial herb. Uncommon in meadows, meadow margins and along streams. 6500-8400 ft. Vicinity of Barton Flats, Wildhorse Meadows, Fish Creek. *White 12342.*

## RHAMNACEAE

***Ceanothus cordulatus*** Kellogg, Mountain whitethorn, Small shrub. Occasional on dry slopes and flats. 5500-8500 ft. Forsee Creek Trail, Seven Oaks, near Grandview Point, Jenks Lake, Wildhorse Creek, Cienega Seca. *White 12996.*

***Ceanothus integerrimus*** Hook. & Arn., deerbrush, Large shrub. Chaparral-oak situations. 5800-6500 ft. Clarks Grade, Middle Control Road, Barton Flats, Jenks Lake Road. *Mistretta 3294a.*

***Ceanothus leucodermis*** Greene, chaparral whitethorn, Large shrub. Occasional on chaparral slopes. 4900-6800 ft. Clarks Grade; Mile Creek, Flats, Barton Flats, near Burro Flats, vicinity of Jenks Lake. *Fraga 2758.*

***Ceanothus perplexans*** Trel., cupped leaf ceanothus, Large shrub. Occasional on dry slopes. 5500-7000 ft. Round Cienega Creek, Seven Oaks, Burro Flats, South Fork Campground, South Fork; Fish Creek. *Mistretta 3647.*

***Frangula californica*** (Eschsch.) A. Gray subsp. ***cuspidata*** (Greene) Kartesz & Gandhi, California buckthorn, Large shrub. Occasional on mountain slopes and in chaparral. 4900-7000 ft. Clarks Grade, Fish Creek, Cienega Seca. [*Rhamnus cuspidata* Greene, *Rhamnus californica* subsp. *cuspidata* (Greene) C.B. Wolf, *Rhamnus californica* var. *viridula* Jeps.]. *Davidson 4614.*

***Rhamnus ilicifolia*** Kellogg, hollyleaf redberry, Large shrub. Uncommon on chaparral slopes. 5600 ft. Vicinity of Burro Flats. *Mistretta 3650.*

## ROSACEAE

***Adenostoma fasciculatum*** Hook. & Arn. var. ***fasciculatum***, chemise, Large shrub. Dominant on lower chaparral slopes. 4900-5800 ft. Clarks Grade, Front Line Road, Radford Road. *Mistretta 3791.*

***Amelanchier alnifolia*** (Nutt.) Nutt. ex M. Roemer, service berry, Large shrub. Occasional on dry slopes. 7000-7800 ft. Near Jenks Lake, Coon Creek. *Fraga 2757.*

***Amelanchier utahensis*** Koehne, pale leaved serviceberry, Large shrub. Uncommon on dry slopes and ridges. 5500-8500 ft. Sugarlump Peak; west ridgeline of Sugarloaf Mountain; Seven Oaks, vicinity of Jenks Lake, South Fork, Cienega Seca Creek, above Big Meadows, Fish Creek. *Mistretta 3451.*

***Cercocarpus betuloides*** Nutt. ex Torr. & A. Gray var. ***betuloides***, mountain mohogany, Large shrub. Occasional on chaparral-oak woodland, slopes and

washes. 5600-6400 ft. Clarks Grade, Seven Oaks, Barton Flats. *Mistretta* 3470.

***Cercocarpus ledifolius*** Nutt. var. ***intermontanus*** N. Holmgren, curl leaf mountain mahogany, Large shrub. Common on dry slopes and ridgelines. 4900-8800 ft. Vicinity of Sugarlump Peak, Seven Oaks; Barton Flats, South Fork; Wildhorse Meadows, east ridgeline of Sugarloaf Mountain, Cienega Seca Creek, Coon Creek. *Fraga* 2766.

***Drymocallis glandulosa*** (Lindl.) Rydb. var. ***viscida*** (Parish) Ertter, sticky cinquefoil, Perennial herb. Uncommon in mesic open areas of pine forest. 7200-7500 ft. Coon Creek. Combines features of *Drymocallis glandulosa* var. *reflexa*, *Drymocallis lactea* var. *lactea*. *Mistretta* 5525.

***Drymocallis lactea*** (Greene) Rydb., sierran woodbeauty, Perennial herb. Uncommon in mesic open areas of pine forest. 7200-7500 ft. Coon Creek. [*Potentilla glandulosa* subsp. *nevadensis* (S. Watson) D.D. Keck]. *Mistretta* 5524.

***Fragaria vesca*** L., California strawberry, woodland strawberry, Perennial herb. Uncommon in shady grassy areas under pines and beside streams. 4900-7800 ft. Seven Oaks, Barton Flats, Jenks Lake Road, vicinity of Burro Flats, Wildhorse Creek. *Mistretta* 3664.

***Geum macrophyllum*** Willd., large leaf avens, Perennial herb. In wet meadows and along streams. 6100-8400 ft. Near Burrow Flats, South Fork Trailhead, Barton Flats, vicinity of South Fork Campground, Wildhorse Creek, Coon Creek, Fish Creek. *Fraga* 2924.

***Holodiscus microphyllus*** Rydb. var. ***microphyllus***, oceanspray, Small shrub. Occasional on open slopes. 6200-8800 ft. East Fork of Barton Creek; vicinity of Barton Flats, Cienega Seca Creek, Wildhorse Road, east ridgeline of Sugarloaf Mountain, Cienega Seca Creek, Coon Creek. *De Groot* 6096.

***Horkelia rydbergii*** Elmer, Rydberg's horkelia, Perennial herb. Occasional in forested understory along streams and in meadows. 5500-8000 ft. Forsee Creek Trail, Seven Oaks, Barton Flats, Jenks Lake, vicinity of Poopout Hill, Sugarloaf Meadow, Wildhorse Creek, Big Meadows, Cienega Seca Creek, Coon Creek. *White* 13210.

†***Horkelia wilderae*** Parish, Barton Flats horkelia, Perennial herb. Occasional in open dry areas in pine forests. 6000-7500 ft. Vicinity of Barton Flats, East Fork of Barton Creek, Frog Creek, Jenks Lake, South Fork Trailhead, vicinity of Big Meadows. *Mistretta* 3740.

†***Ivesia argyrocoma*** (Rydb.) Rydb., silverhair mousetail, Perennial herb. Uncommon in pebble plains. 7000-9000 ft. Ridgeline west of Onyx Summit, Ridge above North Fork of Mission Creek. *Wood* 64.

\****Malus pumila*** Mill., apple, Tree. Persisting cultivar 4900 ft. Clarks Ranch. *Wood* 2664.

- Potentilla anserina** L. subsp. *anserina*, silver weed cinquefoil, Perennial herb. Uncommon in meadows. 7900-8400 ft. Wildhorse Meadows, Cienega Seca. *Wood* 905.
- Potentilla biennis** Greene, biennial cinquefoil, Annual or biennial. Occasional in meadows, moist sandy places. 6000-8200 ft. South Fork Campground, Wildhorse Creek, Lightning Gulch, Coon Creek. *De Groot* 6216.
- Potentilla gracilis** Hook. var. *elmeri* (Rydb.) Jeps., Elmer's cinquefoil, Perennial herb. Occasional in meadows. 6500-8000 ft. Sugarloaf Meadow, Big Meadow, Mission Springs Meadow. *Fraga* 2310.
- Potentilla gracilis** Hook. var. *fastigiata* (Nutt.) S. Watson, slender cinquefoil, Perennial herb. Uncommon in moist places. 5500-6500 ft. Seven Oaks, Barton Flats, South Fork. *Feudge* 842.
- Potentilla wheeleri** S. Watson, Wheeler's cinquefoil, Perennial herb. Occasional in meadows and in understory of pine forests. 6700-8400 ft. Horse Meadows, Sugarloaf Meadow, near Big Meadow, Cienega Seca Creek, Lightning Gulch, Mission Springs Meadow. *Fraga* 2675.
- Prunus emarginata** (Douglas) Walp., bitter cherry, Large shrub. Uncommon on open slopes and ridges. 5000-7900 ft. Seven Oaks; Wildhorse Road, Fish Creek, vicinity of Cienega Seca. *Wood* 950.
- Prunus virginiana** L. var. *demissa* (Nutt.) Torr., western chokecherry, Large shrub. Occasional near edges of streams. 5200-7200 ft. Vicinity of Seven Oaks Creek, Heart Bar Creek, Cienega Seca Creek. *White* 13170.
- \***Pyrus communis** L., common pear, Tree. Persisting cultivar 4900 ft. Clarks Ranch. *Sanders* 15700.
- Rosa californica** Cham. & Schlecht., California wildrose, Small shrub. Occasional near meadows and stream edges. 5500-7000 ft. Seven Oaks, vicinity of South Fork Campground, South Fork Trailhead, ridgeline east of Wildhorse canyon, vicinity of Cienega Seca Creek. *Wood* 1127.
- Rosa woodsii** Lindley var. *ultramontana* (S. Watson) Jeps., interior rose, Small shrub. Occasional near meadows and stream edges. 6700-7300 ft. Sugarloaf Meadow, Fish Creek. *Soza* 1430.
- \***Rubus armeniacus** Focke, Himalayan blackberry, Small shrub. Locally common in meadow and riparian woodland 4900 ft. Clarks Ranch. *Wood* 2682.
- Rubus leucodermis** Torr. & A. Gray var. *bernardinus* (Greene) Jeps., whitebark raspberry, Small shrub. Occasional along creeks and canyons. 5200-7000 ft. Stetson Creek; Barton Creek, Barton Flats, South Fork Trailhead. *Mistretta* 3872.
- Rubus parviflorus** Nutt., western thimbleberry, Small shrub. Occasional in moist shady places. 5500-7000 ft. Middle Control Road, Seven Oaks, Stetson Creek, Frog Creek, Barton Flats, South Fork Trailhead. *Mistretta* 3981.
- Rubus ursinus** Cham. & Schlecht., California blackberry, Small shrub. Occasional in mesic places. 4900 ft. Vicinity of Mile Creek and Sand Creek. *Fraga* 2765.

## RUBIACEAE

*Galium angustifolium* Nutt. subsp. *angustifolium*, narrowleaf bedstraw, Suffruticose perennial. Common on dry slopes in forests. 5300-7700 ft. Vicinity of Seven Oaks; Radford Road, South Fork Campground, Jenks Lake, Wildhorse Creek, Cienega Seca Creek, Wildhorse Trail, Fish Creek, Coon Creek. *De Groot 6112*.

*Galium angustifolium* Nutt. subsp. *nudicaule* Dempster & Stebbins, narrowleaf bedstraw, Suffruticose perennial. Dry slopes and flats, rocky benches above creeks. 5900-8000 ft. Burro Flats, Cienega Seca Creek, Lightning Gulch, Fish Creek, Coon Creek, North Fork Mission Creek. *Gross 4068*.

\**Galium aparine* L., common bedstraw, stickywilly, Annual. Occasional on shady slopes and river banks. 5500-8300 ft. Round Cienega Creek, Barton Creek, Fish Creek Trail. *Mistretta 4101*.

†*Galium johnstonii* Dempster & Stebbins, Johnston's bedstraw, Perennial herb. Uncommon on scree slopes. 5700-6300 ft. Kilpecker Creek, Middle Control Road, 2.5 miles west of western entrance to Jenks Lake Road along Hwy 38. *De Groot 6053*.

*Galium parishii* Hilend & J. T. Howell, Parish's bedstraw, Suffruticose perennial. Occasional on dry slopes under pines and rocky places. 5700-8800 ft. Vicinity of Sugarlump Peak, Round Cienega Creek; Stetson Creek, Rattlesnake Creek, Barton Flats, Lost Creek; Wildhorse Creek, Lightning Gulch, Cienega Seca Creek, Wildhorse Road; Coon Creek, vicinity of Mission Creek Campground, Sugarloaf Mountain. *Fraga 3145*.

*Galium porrigens* Dempster var. *porrigens*, graceful bedstraw, Suffruticose perennial. Uncommon in understory of pines and on open slopes. 5000-5900 ft. Vicinity of Clarks Ranch, Creek, Hathaway Flat, along Glass Road near Barton Creek. *Mistretta 3899*.

*Galium triflorum* Michaux, sweet scented bedstraw, Perennial herb. Occasional in moist shaded places beside creeks. 5500-7200 ft. Seven Oaks, Lost Creek. *Gross 4203*.

*Kelloggia galioides* Torr., milk kelloggia, Perennial herb. Occasional in moist shaded areas. 7000-8300 ft. West ridge of Sugarloaf Mountain, South Fork Trail, Fish Creek. *Mistretta 3360*.

## SALICACEAE

*Populus tremuloides* Michaux, quaking aspen, Tree. Rare along edges of creek. 7100-7200 ft. Fish Creek (Aspen Grove). *Davidson 4516*.

*Populus trichocarpa* Torr. & A. Gray, black cottonwood, Tree. Common along creeks and rivers. 5200-7500 ft. Near confluence of Barton Creek and Santa

Ana River; west of South Fork Campground along Santa Ana River, Lost Creek Trailhead, Cienega Seca Creek, Fish Creek, Coon Creek. *Fraga* 2548.

***Populus trichocarpa*** Torr. & A. Gray var. ***ingrata*** (Jeps.) Parish, narrow Santa Bernardino cottonwood, Tree. Occasional along streams. 6000-7300 ft. Vicinity of South Fork Campground, Fish Creek, Coon Creek, road to Mission Creek. This name applies to the narrow leafed *Populus* plants in the study area. This taxon needs additional study and warrants recognition at the species level. The name *P. angustifolia* E. James has been also applied to these plants, however this species has been mistakenly reported from California. *O'Brien* 30-2009.

***Salix exigua*** Nutt., narrowleaf willow, Large shrub. Uncommon along streams and creeks. 7000-7200 ft. Cienega Seca Creek. *White* 13163.

***Salix laevigata*** Bebb, red willow, Tree. Occasional in wet areas along creeks. 6870 ft. Only one collection within the study area from Cienega Seca Creek. *White* 13224B.

***Salix lasiolepis*** Benth., arroyo willow, Large shrub. Common along streams, creeks, and other wet places. 4900-7900 ft. Common within the study area. *Gross* 4144.

***Salix lemmonii*** Bebb, Lemmon's willow, Large shrub. Occasional in riparian areas. 6200-7700 ft. Vicinity of Barton Flats, Wildhorse Road, Cienega Seca Creek. *White* 12489.

***Salix lucida*** Muhlenb. subsp. ***lasiandra*** (Benth.) E. Murray, shining willow, Tree. Occasional along streams. 6100-7400 ft. Near Santa Ana River Road east of Rattlesnake Creek, South Fork Campground, Sugarloaf Meadow, Cienega Seca Creek. *Fraga* 3100.

***Salix lutea*** Nutt., yellow willow, Large shrub. Occasional along streams. 6300-7800 ft. Vicinity of Poopout Hill, Lost Creek, Cienega Seca Creek, Coon Creek. *De Groot* 6124.

***Salix scouleriana*** Hook., Scouler willow, Large shrub. Occasional in meadows and riparian areas. 6300-8000 ft. Clarks Grade, Stetson Creek, East Fork of Barton Creek, east of Jenks Lake, Lost Creek; Fish Creek, Wildhorse Creek, Coon Creek. *Gross* 4122.

## SAXIFRAGACEAE

†***Boykinia rotundifolia*** Parry, round leaved boykinia, Perennial herb. Occasional in moist shady places in canyons. 5000-6000 ft. Confluence of Stetson Creek and Forsee Creek, Mile Creek, Barton Creek, Jenks Lake Road, Middle Control Road. *Mistretta* 3859.

†*Heuchera parishii* Rydb., Parish's alumroot, Perennial herb. Occasional on steep gravely rocky scree slopes and cliff faces. 6300-9600 ft. Locally common on forested slopes within the study area. (including *H. alpestris* from the alpine to subalpine zones and plants identified as *H. rubescens*). *Fraga* 3135.

*Lithophragma affine* A. Gray, woodland star, Geophyte. Occasional in open areas under pines. 5000-6900 ft. Vicinity of Round Cienega Creek, Middle Control Road and Forsee Creek, South Fork Campground. *Gross* 3997.

*Lithophragma tenellum* Nutt., slender woodland star, Geophyte. Occasional in open rocky areas, pebble plains. 6000-9100 ft. Barton Flats, vicinity of South Fork Campground, South Fork Trailhead, College Camp, near Big Meadows, east ridgeline of Sugarloaf Mountain. *Fraga* 2662.

*Micranthes odontoloma* (Piper) A. Heller, brook saxifrage, Geophyte. Uncommon on wet banks by streams. 6300-8000 ft. Lost Creek, Fish Creek, South Fork of Mission Creek. *Gross* 4213.

## SCROPHULARIACEAE

*Limosella acaulis* Sessé & Mociño, broadleaved mudwort, Aquatic annual. Uncommon at lake margins 6500 ft. Jenks Lake. *Wood* 2440.

\**Verbascum thapsus* L., woolly mullein, Perennial herb. Occasional in meadows and along creeks, and in open forests. 5000-6900 ft. Forsee Creek Trailhead, Seven Oaks, down river from South Fork Campground, Sugarloaf Meadow, Cienega Seca Creek. *Gross* 3514.

## SOLANACEAE

*Datura wrightii* Regel, western jimsonweed, Perennial herb. Uncommon in dry meadow 4900 ft. Clarks Ranch. *Wood* 2662.

*Nicotiana attenuata* Torr., coyote tobacco, Annual. Uncommon in chaparral, disturbed places, roadsides. 5000-8500 ft. Vicinity of Sugarlump Peak, Seven Oaks, Barton Flats, South Fork Trailhead, along road to Sugarloaf Meadow, Wildhorse Creek, just west of Heart Bar Peak. *Mistretta* 3357.

*Solanum xanti* A. Gray var. *xanti*, chaparral nightshade, purple nightshade, Suffruticose perennial. Occasional in chaparral to montane forests. 7000-9800 ft. Radford Road, South Fork Trailhead, Cienega Seca Creek, Heart Bar Campground, Coon Creek, east ridge of Sugarloaf Mountain. *Mistretta* 3359.

## ULMACEAE

\**Ulmus pumila* L., Siberian elm, Tree. Uncommon, waifs in disturbed areas. 5500-5800 ft. Round Cienega Creek, Barton Creek. *Mistretta* 4098.

## URTICACEAE

*Urtica dioica* L. subsp. *holosericea* (Nutt.) Thorne, hoary nettle, Perennial herb. Occasional along shady creeks and streams. 5000-7700 ft. Pinezanita; Barton Flats drainage, Wildhorse Road, Cienega Seca Creek, above Big Meadows. *Mistretta* 3481.

## VERBENACEAE

*Verbena lasiostachys* Link subsp. *scabrida* Moldenke, western verbena, Perennial herb. Occasional in moist areas near streams. 5200-6000 ft. Clarks Grade, Forsee Creek, Santa Ana Canyon. *Fraga* 3053.

## VIOLACEAE

*Viola douglasii* Steudel, Douglas' violet, Geophyte. Uncommon in open areas and flats, 5500 ft. *Mistretta* 3547.

*Viola macloskeyi* F. Lloyd, small white violet, Geophyte. Uncommon in meadows and wet banks along streams. 6300-8600 ft. Lost Creek, South Fork, Wildhorse Meadows, Fish Creek, Mission Springs Meadow. *Gross* 4126.

*Viola pinetorum* Greene subsp. *pinetorum*, pine violet, Geophyte. Occasional in open forests. 6300-6500 ft. Barton Flats, South Fork. *Fraga* 2784.

*Viola purpurea* Kellogg subsp. *purpurea*, goosefoot violet, Geophyte. Occasional in dry areas in chaparral and forests. 5500-8200 ft. Vicinity of Barton Flats, Barton Creek, Creek, Burro Flats, road to Sugarloaf Meadow, Wildhorse Road. *Mistretta* 3661.

*Viola sororia* Willd. subsp. *affinis* (leConte) R. J. Little, northern bog violet, Geophyte. Uncommon along streams in meadow. 6700 ft. Sugarloaf Meadow. *Soza* 1528.

## VISCACEAE

*Arceuthobium abietinum* (Engelm.) Hawksw. & Weins, fir dwarf mistletoe, Succulent perennial herb. Uncommon on *Abies concolor*. 5200-7300 ft. Vicinity of Seven Oaks Resort, Barton Flats, Lost Creek, South Fork, Fish Creek. *Gross* 4208.

*Arceuthobium campylopodum* Engelm., pine dwarf mistletoe, Succulent perennial herb. Uncommon on *Pinus jeffreyi* and *P. ponderosa*. 5300-7700 ft. Vicinity of Seven Oaks; Hathaway Flat, Barton Flats, South Fork, Cienega Seca Creek, Vicinity of Mission Creek and Heart Bar Creek. *Wood* 1017.



- Phoradendron bolleanum*** (Seem.) Eichler, fir mistletoe, Parasitic perennial herb. Occasional on *Abies concolor*. 7000-8500 ft. Barton Flats, vicinity of South Fork Trailhead, Poopout Hill, unnamed canyon north of Cienega Seca Creek, Lightning Gulch, canyon above Big Meadows, Coon Creek, Sugarloaf Mountain. [*Phoradendron pauciflorum*]. *De Groot 6137*.
- Phoradendron juniperinum*** A. Gray, juniper mistletoe, Parasitic perennial herb. Occasional on *Juniperus occidentalis*. 6700-8500 ft. Sugarloaf Meadow Wildhorse Road, Cienega Seca Creek, Near Heart Bar Campground, Coon Creek, Sugarloaf Mountain. *De Groot 6138*.
- Phoradendron serotinum*** (Raf.) M.C. Johnston subsp. ***macrophyllum*** (Engelm.) Kuijt, bigleaf mistletoe, Parasitic perennial herb. Uncommon on western sycamore 4900 ft. Clarks Ranch. *Wood 2667*.
- Phoradendron serotinum*** (Raf.) M.C. Johnston subsp. ***tomentosum*** (DC.) Kuijt, oak mistletoe, Parasitic perennial herb. Occasional in oak woodland most often on *Quercus*, less often on other woody dicots (*Adenostema*, *Cercocarpus*, *Eriogonum*, *Prunus*). 5700-6800 ft. Barton Flats, mouth of South Fork. *Fraga 2843*.

## VITACEAE

- \**Vitis vinifera* L., cultivated grape, Liana. Uncommon in meadow 4900 ft. Clarks Ranch. *Wood 2663*.

## ANGIOSPERMAE - MONOCOTYLEDONES

### AGAVACEAE

- Hesperoyucca whipplei*** (Torr.) Baker ex Trel., our lord's candle, quixote plant, Succulent shrub. Occasional on slopes and cliffs at lower elevations of project area. 5000-6000 ft. Clarks Grade, Round Cienega Creek, Seven Oaks area. *Mistretta 3794*.

### ALLIACEAE

- Allium burlewii*** Davidson, Burlew's onion, Geophyte. Uncommon on dry slopes and ridges. 6800-7800 ft. Big Meadows, Heart Bar, Wildhorse Canyon. *Mistretta 5504*.
- Allium parryi*** S. Watson, Parry's fringed onion, Geophyte. Occasional in open areas. 5300-7000 ft. Barton Creek, Heart Bar Campground. *Fraga 2816*.

## ASPARAGACEAE

\**Asparagus officinalis* L., garden asparagus, Perennial herb. Uncommon in along the Santa Ana River and Clarks Ranch. 4600 ft. Shaded riparian areas. *Fraga 3434*.

## CYPERACEAE

*Carex abrupta* Mackenzie, abrupt beaked sedge, Perennial herb. Occasional in meadows and banks of creek along streams. 6600-8000 ft. Vicinity of Bellyache Springs, Frog Creek, Lost Creek, Mission Springs Meadow. *Gross 4184*.

*Carex alma* L. H. Bailey, sturdy sedge, Perennial herb. Occasional in meadows and along streams. 5500-8000 ft. Round Cienega Creek, Staircase Canyon, Rattlesnake Creek, Barton Flats, Lost Creek, Big Meadows, Lightning Gulch, Fish Creek, Heart Bar, Coon Creek, Cienega Seca. *Gross 4142*.

*Carex aquatilis* Wahlenb. var. *aquatilis*, water sedge, Perennial herb. Uncommon in wet areas and meadows. 8400 ft. Wildhorse Meadow. *White 12310*.

*Carex aquatilis* Wahlenb. var. *dives* (T. Holm) Kük., Sitka sedge, Perennial herb. Uncommon in mud under shallow water in a low area near the stream. 5800-6000 ft. near Barton Creek. This collection is the only reported from San Bernardino County. *Sanders 17381 (UCR)*.

*Carex athrostachya* Olney, slender beak sedge, Perennial herb. Occasional along stream edges. 6000-6200 ft. Santa Ana River in the vicinity of University Camp and Jenks Lake. *Gross 3525*.

*Carex aurea* Nutt., golden sedge, Perennial herb. Uncommon in meadows and along streams. 7200-8400 ft. Big Meadows, Wildhorse Meadows, Fish Creek, Coon Creek, Mission Springs Meadow. *Fraga 2973*.

*Carex bolanderi* Olney, Bolander's sedge, Perennial herb. Occasional along stream banks and in meadows. 5000-7500 ft. Vicinity of Seven Oaks, Creek, Staircase Canyon, Barton Flats, Jenks Lake, South Fork Campground, Lost Creek, vicinity of Poopout Hill, South Fork, Big Meadows, Fish Creek. *Gross 4150*.

*Carex douglasii* Boott, Douglas sedge, Perennial herb. Uncommon openings in yellow pine forest 6900 ft. Coon Creek. *Wood 2327*.

*Carex fracta* Mack., fragile sheath sedge, Perennial herb. Occasional in meadows and along streams. 5000-8200 ft. Vicinity of Seven Oaks, Creek, Bellyache Springs, Rattlesnake Creek, Barton Flats, Jenks Lake, East Fork of Barton Creek, South Fork, Lost Creek, Wildhorse Meadows, Fish Creek,. *Gross 4156*.

- Carex hassei*** L. Bailey, salt sedge, Perennial herb. Uncommon in meadows and along streams. 6500-8300 ft. Along Santa Ana River, Sugarloaf Meadow, Big Meadows, Mission Springs. *Soza 1490*.
- Carex heteroneura*** W. Boott, different-nerve sedge, Perennial herb. Uncommon in ephemeral creek above springs with sandy/silty soils. 7800 ft. Mile Creek. *Stoughton 569*.
- Carex jonesii*** L. Bailey, Jones' sedge, Perennial herb. Occasional in meadows and springy areas. 6500-8400 ft. Stetson Creek, Frog Creek, South Fork, Wildhorse Creek, Fish Creek, Mission Springs Meadow. *Gross 4135*.
- Carex lemmonii*** W. Boott, Lemmon's sedge, Perennial herb. Occasional in meadows and along streams. 6700-8000 ft. Sugarloaf Meadow, Wildhorse Creek. *Fraga 2436*.
- Carex multicaulis*** L. H. Bailey, forest sedge, Perennial herb. Occasional on dry slopes and openings in forests. 5200-7500 ft. Pinezanita, Forsee Creek Trail, Hathaway Flat, Barton Flats, Jenks Lake, South Fork, vicinity of Poopout Hill. *Mistretta 3580*.
- Carex nebrascensis*** Dewey, Nebraska sedge, Perennial herb. Occasional in meadows and along streams. 6000-8800 ft. Clarks Grade, Jenks Lake, Sugarloaf Meadow, Wildhorse Meadows, Heart Bar, Fish Creek, Mission Springs Meadow. *Fraga 2457*.
- †***Carex occidentalis*** L. Bailey, western sedge, Perennial herb. Dry edges of meadows. 5300-7700 ft. Near Seven Oaks Resort, Frog Creek, Lost Creek, San Y Ca Spring, Horse Meadows, South Fork, Wildhorse Meadow. *Gross 5329*.
- Carex pellita*** Muhl. ex Willd., woolly sedge, Perennial herb. Occasional in meadows and springs. 5500-8200 ft. Seven Oaks Road, Wildhorse Creek, near Heart Bar Campground, Fish Creek Meadows area. *Mistretta 3911*.
- Carex phaeocephala*** Piper, brown head sedge, Perennial herb. Uncommon in subalpine forest and alpine fell fields. 9912 ft. Sugarloaf Mountain. *Gross 4130*.
- Carex praegracilis*** W. Boott, clustered field sedge, Perennial herb. Occasional in dry edges of meadows. 6000-8500 ft. Staircase Canyon, Big Meadows, Wildhorse Meadows, Lightning Gulch, Cienega Seca Creek. *Fraga 2308*.
- Carex rossii*** Boott, Ross' sedge, Perennial herb. Occasional in moist areas. 6800-7800 ft. South Fork and Lost Creek. *Munz 17079 (CAS)*.
- Carex schottii*** Dewey, Schott's sedge, Perennial herb. Uncommon along stream edges and meadows. 8000 ft. Sand Creek, Mission Springs Camp. *Gross 4032*.
- Carex senta*** Boott, rough sedge, Perennial herb. Occasional in meadows, streams and springy places. 5000-8000 ft. Seven Oaks, Mile Creek, Jenks Lake, South

Fork, Lost Creek, Sugarloaf Meadow, Big Meadows, Fish Creek, Heart Bar, Coon Creek. *Gross* 4109.

***Carex subfusca*** W. Boott, brown sedge, Perennial herb. Occasional in wet places. 5000-8800 ft. Mile Creek, Stetson Creek, Barton Flats, Jenks Lake, Horse Meadow, vicinity of Poopout Hill, Sugarloaf Meadow, Wildhorse Meadows, Fish Creek, Mission Springs Camp. *Mistretta* 4036.

***Carex utriculata*** Boott, beaked sedge, Perennial herb. Uncommon along stream and meadow. 7000 ft. South base of Sugarloaf Mountain. *Munz* 17157.

***Cyperus niger*** Ruiz Lopez & Pavon, black flatsedge, Perennial herb. Uncommon in moist seep. 5000-5200 ft. Vicinity of Clarks Ranch. *Wood* 2692.

***Cyperus squarrosus*** L., bearded flatsedge, Annual. Uncommon in moist seep. 5000-5200 ft. Vicinity of Clarks Ranch. *Wood* 2697.

***Eleocharis acicularis*** (L.) Roem. var. ***acicularis***, needle spikerush, Perennial herb. Uncommon in wet places along streams and in meadows. 5000-7000 ft. Santa Ana River, Barton Flats. *Peirson* 8350.

***Eleocharis acicularis*** (L.) Roem. var. ***occidentalis*** Svenson, needle spikerush, Perennial herb. Uncommon in wet meadow. 8400-8600 ft. Wildhorse Meadow. *Gross* 5237.

***Eleocharis bella*** (Piper) Svenson, beautiful spikerush, Annual. Uncommon in wet places and meadows. 6500-8800 ft. Barton Flats, Wildhorse Meadows, Jenks Lake. *Wood* 2439.

***Eleocharis bernardina*** (Munz & I.M.Johnst.) Munz, San Bernardino spikerush, Perennial herb. Uncommon in meadows and springy places. 6800-8000 ft. Wildhorse Creek. *Fraga* 2961.

***Eleocharis montevidensis*** Kunth, sand spikerush, Perennial herb. Near rivers and springs. 5000-7700 ft. Vicinity of Seven Oaks and Wildhorse Road. *Fraga* 2516.

***Eleocharis parishii*** Britton, Parish's spikerush, Perennial herb. Uncommon in springs and streams. 7700 ft. Wildhorse Road. *White* 12464.

***Eleocharis quinqueflora*** (Hartmann) O. Schwarz, fewflower spikerush, Perennial herb. Uncommon in meadows and along streams. 8000 ft. Wildhorse Creek. *Sanders* 15046 (UCR).

***Eleocharis radicans*** (Poiret) Kunth, rooted spikerush, Perennial herb. Occasional in moist areas. 5000-5200 ft. Vicinity of Clarks Ranch and Barton Flats. *Peirson* 8350.

***Eleocharis rostellata*** (Torr.) Torr., beaked spikerush, Perennial herb. Beside rivers and springs. 5000-7700 ft. Vicinity of Seven Oaks, Hamilton Creek, Wildhorse Road. *Mistretta* 4067.

***Schoenoplectus acutus*** (Bigelow) Á. Löve & D. Löve var. ***occidentalis*** (S. Watson) S.G. Sm, tule, Perennial herb. Uncommon in ponded water. 5000-6400 ft. Vicinity of Barton Flats and Seven Oaks. *Wood* 2230.

***Scirpus microcarpus*** J. Presl & C. Presl, paniced bulrush, Perennial herb. occasional in springs and meadows and along streams. 5000-8000 ft. Vicinity of Seven Oaks, Hamilton Creek, Stetson Creek, Barton Creek, Staircase Canyon, Jenks Lake, Wildhorse Meadows, Big Meadows, Fish Creek Meadows, Coon Creek, Cienega Seca Creek. *Mistretta* 3491.

## IRIDACEAE

***Iris hartwegii*** Baker subsp. ***australis*** (Parish) L.W. Lenz, rainbow iris, Perennial herb. Occasional in openings under under pines. 5000-7000 ft. Seven Oaks, Middle Control Road, Round Cienega Creek, Barton Flats, Jenks Lake. *De Groot* 6062.

***Iris missouriensis*** Nutt., western blue, Perennial herb. Uncommon in dry meadows. 6800 ft. Big Meadows. *Fraga* 2822.

***Sisyrinchium bellum*** S. Watson, western blue-eyed grass, Perennial herb. Occasional in meadows, springs, and along streams. 5000-8000 ft. Seven Oaks, Sugarloaf Meadow, Wildhorse Road, Cienega Seca Creek, Mission Springs Meadow. *Fraga* 2431.

***Sisyrinchium idahoense*** E. Bickn., Idaho blue-eyed grass, Perennial herb. Meadows. 6500-8500 ft. Sugarloaf Meadows, Wildhorse Meadows, Fish Creek Meadows, Cienega Seca Creek, Mission Springs Meadows. *Fraga* 2970.

†***Sisyrinchium longipes*** (E.P. Bicknell) Kearney & Peebles, timberland blue-eyed grass; yellow-eyed grass, Perennial herb. Common in meadow. 6500-7000 ft. Known from one location at Sugarloaf Meadow. *Soza* 1496.

## JUNCACEAE

***Juncus articulatus*** L., jointleaf rush, Perennial herb. Uncommon near wet areas along streams. 6000 ft. Santa Ana River northwest of South Fork Campground. *Gross* 3503.

***Juncus balticus*** Willd., wire rush, Perennial herb. Occasional in wet marshy areas and meadows. 5500-8500 ft. Round Cienega Creek, East Fork of Hamilton Creek, South Fork Campground, Wildhorse Meadows, Cienega Seca Creek, Heart Bar, Fish Creek Meadows, Coon Creek, Mission Springs Meadow. *Fraga* 2458.

***Juncus bufonius*** L. var. ***bufonius***, toad rush, Annual. Uncommon in vernal moist habitats. 6000-6400 ft. Barton Flats, Jenks Lake. *Tilforth* 1200.

***Juncus bufonius*** L. var. ***occidentalis*** F. J. Herm., western toad rush, Annual. Uncommon in moist areas. 7200-8700 ft. Bellyache Springs, Wildhorse Meadows. *Mistretta* 5468.

- Juncus effusus** L., common rush, Perennial herb. Occasional in meadows, springs and other wet places. 5200-8200 ft. Round Cienega Creek, Barton Creek, Jenks Lake, South Fork Campground, Sugarloaf Meadow, Wildhorse Meadow. *Fraga 2545*.
- Juncus longistylis** Torr., long styled rush, Perennial herb. Uncommon near springs and meadows. 7700-8800 ft. Wildhorse Road, Wildhorse Meadows. *White 12466*.
- Juncus macrandrus** Coville, longanther rush, Perennial herb. Occasional in meadows and springs and along streams. 6000-8600 ft. Mile Creek, Jenks Lake, vicinity of South Fork Campground, Lost Creek, Sugarloaf Meadow, Wildhorse Meadows, Heart Bar, Fish Creek, Mission Springs Meadow. *Gross 4153*.
- Juncus macrophyllus** Coville, longleaf rush, Perennial herb. Occasional along streams and creeks. 5000-8000 ft. East Fork of Hamilton Creek, vicinity of Seven Oaks, Barton Flats, Jenks Lake, vicinity of South Fork Campground, Wildhorse Road, Fish Creek, Cienega Seca Creek, Mission Springs. *Gross 4148*.
- Juncus mexicanus** Willd., Mexican rush, Perennial herb. Occasional in moist areas. 6300-7800 ft. Barton Flats, Coon Creek. *De Groot 6115*.
- Juncus nevadensis** S. Watson, Sierra rush, Perennial herb. Occasional in meadows and stream banks. 8400-8800 ft. Wildhorse Meadows. *White 12332*.
- Juncus orthophyllus** Cov., straight leaved rush, Perennial herb. Uncommon in wet streamlet feeding into spring area from above. 7800-7900 ft. Vicinity of Bellyache Spring. *Stoughton 578*.
- Juncus rugulosus** Engelm., wrinkled rush, Perennial herb. Occasional in seeps, springs and other wet areas. 5000-7800 ft. Pinezanita, Seven Oaks, vicinity of Wildhorse Canyon and Wildhorse Road. *Wood 1154*.
- Juncus saximontanus** Nelson, Rocky Mountain rush, Perennial herb. Occasional in meadows and springs and along streams. 6200-8400 ft. Vicinity of Jenks Lake, South Fork Campground, Lost Creek, Wildhorse Meadows, Big Meadows, Mission Creek, Cienega Seca Creek. *Gross 4059*.
- Juncus tiehmii** B. Ertter, Nevada rush, Annual. Occasional along edges of ephemeral stream. 6600-7400 ft. Cienega Seca. *Fraga 3671*.
- Juncus xiphioides** E. Meyer, irisleaf rush, Perennial herb. Occasional in meadows, springs, seeps, and along streams. 5000-8400 ft. Pinezanita, vicinity of Camp Radford, East Fork of Barton Creek, South Fork, Wildhorse Meadows, Big Meadows, Cienega Seca Creek, Coon Creek. *Mistretta 4025*.
- Luzula comosa** E. Meyer, hairy wood rush, Perennial herb. Occasional along creeks and streams. 6500-8600 ft. Mile Creek, vicinity of Jenks Lake, Lost Creek, South Fork, Wildhorse Meadows, Heart Bar, Fish Creek, Mission Springs Meadow. *Gross 4190*.

## LEMNACEAE

*Lemna minor* L., lesser duckweed, Aquatic annual. Uncommon in standing water. 5300-6700 ft. Vicinity of Seven Oaks, Sugarloaf Meadow. *Fraga* 2683.

*Lemna minuta* Kunth, least duckweed, Aquatic annual. Uncommon in standing water. 6700 ft. Sugarloaf Meadow. *Fraga* 2439.

## LILIACEAE

*Calochortus invenustus* Greene, plain mariposa lily, Geophyte. Occasional in openings of pine understory. 5500-9000 ft. Forsee Creek Trail, Seven Oaks, Radford Road, Barton Flats, vicinity of Jenks Lake, South Fork Campground, Wildhorse Road, Coon Creek, Onys Summit. *De Groot* 6108.

†*Calochortus plummerae* Greene, Plummer's mariposa lily, Geophyte. Rare on dry open slopes. 5000 ft. Vicinity of Seven Oaks. *Prince* 602.

*Fritillaria pinetorum* Davidson, pinewoods fritillary, Geophyte. Rare on open slopes. 6900-8200 ft. West ridgeline of Sugarloaf Mountain, vicinity of Heart Bar, Fish Creek. *Gross* 4009.

†*Lilium humboldtii* Roezl & Leichtlin subsp. *ocellatum* (Kellogg) Thorne, spotted Humboldt's lily, Geophyte. Rare along streams. 5200 ft. Confluence of Stetson and Forsee Creek. *Fraga* 3054.

†*Lilium parryi* S. Watson, lemon lily, Geophyte. Occasional along creeks and streams, in meadows and springs. 5200-7700 ft. Stetson Creek, Hamilton Creek, East Fork of Barton Creek, near Jenks Lake, vicinity of South Fork Campground, Lost Creek, South Fork, vicinity of Poopout Hill, Wildhorse Meadow, Fish Creek, Mission Creek. *Gross* 4145.

## ORCHIDACEAE

*Corallorhiza maculata* Raf., spotted coralroot, Geophyte. Occasional in shaded areas in pine duff. 6200-9700 ft. Sugarloaf Mountain, Hathaway Flat, Barton Flats, Jenks Lake, vicinity of Poopout Hill, South Fork, Lost Creek, Fish Creek. *Mistretta* 3331.

*Epipactis gigantea* Douglas ex Hook., stream orchid, Perennial herb. Uncommon in meadows and springs. 5100-5300 ft. Seven Oaks, Hamilton Creek. *Mistretta* 4063.

*Piperia transversa* Suksd., royal rein orchid, Geophyte. Uncommon under pines, in pine duff. 5300 ft. Forsee Creek. *Sanders* 31353 (UCR).

*Piperia unalascensis* (Spreng.) Rydb., slender spire orchid, Geophyte. Uncommon under pines, in pine duff. 6100-6500 ft. Vicinity of Stetson Creek, Hathaway Flats, Barton Flats, Jenks Lake. *Sanders* 31354 (UCR).

- Platanthera sparsiflora*** (S. Watson) Schltr., sparse flowered bog orchid, Geophyte. Uncommon along streams and other wet places. 5500-8000 ft. Seven Oaks, Fish Creek, Heart Bar, Coon Creek, Cienega Seca Creek. *De Groot 6125*.
- Platanthera leucostachys*** (Pursh) Lindley, white bog orchid, Geophyte. Uncommon in meadows, seeps and along streams. 5000-8000 ft. Seven Oaks, Staircase Canyon, Barton Flats, Lost Creek, Wildhorse Creek, Fish Creek. *Gross 4116*.

## POACEAE

- \****Agropyron cristatum*** (L.) Gaertner, crested wheat grass, Perennial herb. Uncommon on disturbed slopes. 6900-8300 ft. Native to central Europe and the eastern Mediterranean. *Fraga 3060*.
- Agrostis exarata*** Trin., spike bentgrass, Perennial herb. Occasional in creeks, mesic areas. 5200-7000 ft. Seven Oaks, Clarks Grade, Barton Creek, Rattlesnake Creek, east of Jenks Lake, South Fork Campground, Lost Creek, Wildhorse Creek, Big Meadows, Fish Creek. *Gross 4146*.
- Agrostis idahoensis*** Nash, Idaho bentgrass, Perennial herb. Occasional in meadows and stream banks. 7000-8400 ft. East Fork of Barton Creek, Wildhorse Meadows, Big Meadows, Fish Creek. *Wood 1028*.
- Agrostis pallens*** Trin., thingrass, Perennial herb. Uncommon in meadows and moist areas. 6300-8400 ft. South Fork Campground, Wildhorse Meadows. *White 13239B*.
- Agrostis scabra*** Willd., rough bentgrass, Perennial herb. Occasional in meadows and mesic places. 5000-8200 ft. Seven Oaks, Clarks Grade, Mile Creek, East Fork of Barton Creek, Barton Flats, Jenks Lake, South Fork Campground, Lost Creek, Wildhorse Road, Big Meadows, Fish Creek. *Gross 4187*.
- \****Agrostis stolonifera*** L., *Agrostis stolonifera*, Perennial herb. Occasional in meadowy and riparian areas. 5500-7000 ft. Staircase Canyon, Barton Creek, South Fork, Lost Creek, South Fork Campground, Wildhorse Creek. *Gross 4110*.
- Agrostis thurberiana*** A. Hitchc., Thurber's bentgrass, Perennial herb. Uncommon at edge of creek. 6850-7400 ft. East Fork Barton Creek. *Gross 5401*.
- \****Alopecurus pratensis*** L., meadow foxtail, Perennial herb. Uncommon in full sun of meadow, 6930 ft. Junction of Jenks Lake and South Fork Trail. *Mistretta 3985*.
- Bouteloua gracilis*** (Kunth) Griffiths, blue grama, Perennial herb. Occasional on dry slopes, pebble plains. 6300-8500 ft. South Fork Campground, Lightning Gulch, Hear Bar, east ridgeline of Sugarloaf Mountain, Onyx Summit. *White 13278*.



- Bromus anomalus*** Fourn., nodding brome, Perennial herb. Uncommon in ephemeral creek in canyon bottom, chaparral and woodland on surrounding slopes. 7500 ft. Collected from one location at Coon Creek. *Wood* 2320.
- Bromus carinatus*** Hook. & Arn. var. *carinatus*, California brome grass, Perennial herb. Occasional on dry open and often disturbed slopes. 5500-8400 ft. Forsee Creek Trail, Flats, Radford Road, Creek, Staircase Canyon, Burro Flats, Rattlesnake Canyon, Stetson Creek, Barton Flats, Jenks Lake, on road to Poopout Hill, Wildhorse Road, Lightning Gulch, Cienega Seca Creek, Heart Bar, Coon Creek. *White* 12974.
- Bromus ciliatus*** L., fringed brome, Perennial herb. Occasional around meadows and mesic places. 5300-7300 ft. Forsee Creek, East Fork of Barton Creek, vicinity of Poopout Hill, Lost Creek, Fish Creek. *Gross* 4151.
- \****Bromus diandrus*** Roth, ripgut brome, Annual. Occasional in disturbed areas. 5225 ft. Barton Creek and Santa Ana River. *Mistretta* 3870.
- Bromus grandis*** (Shear) Hitchc. in Jeps., tall brome, Perennial herb. Uncommon on dry slopes. 5000-5700 ft. Vicinity of Seven Oaks. *Mistretta* 3466.
- Bromus hallii*** (Hitchc.) Saarela & P.M. Peterson, Hall's brome, Perennial herb. Uncommon in open area in mixed forest. 7900 ft. Near the summit of Radford Road. *Fraga* 3637.
- \****Bromus inermis*** Leyss. subsp. *inermis*, smooth brome, Perennial herb. Occasional in open disturbed areas often adjacent to meadows. 6800-8000 ft. Collected in the vicinity of Big Meadow, Sugarloaf Meadow and South Fork Meadow. *Fraga, Corbett & Gault* 3005.
- Bromus orcuttianus*** Vasey, Orcutt's brome, Perennial herb. Occasional in the understory of forest. 6000-8000 ft. Forsee Creek Trail, Radford Road, Hathaway Flat, Barton Flats, Stetson Creek, East Fork of Barton Creek. *Mistretta* 4006.
- Bromus pseudolaevipes*** Wagnon, coast range brome, Perennial herb. Uncommon in dry meadow edges, beneath pines. 6700-6800 ft. Jenks Lake, Sugarloaf Meadow. *Soza* 1493.
- Bromus richardsonii*** Link, fringed brome, Perennial herb. Uncommon in meadows and along streams. 6500-6800 ft. Big Meadows, Fish Creek. *Davidson* 4511.
- \****Bromus tectorum*** L., cheatgrass, Annual. Common on dry slopes, under pines, disturbed areas, roadsides, burn areas. 5600-8200 ft. Burro Flats, Cienega Seca Creek, Heart Bar, Mission Springs Camp. *Mistretta* 3667.
- Bromus vulgaris*** (Hook.) Shear, Columbia brome, Perennial herb. Uncommon in moist areas near meadow. 7500 ft. South Fork of Santa Ana River. *Munz* 11980.
- \****Cynodon dactylon*** (L.) Pers., Bremuda grass, Perennial herb. Uncommon on roadsides. 5950 ft. Hwy 38. *Wood* 2274A.

- \**Dactylis glomerata* L., orchard grass, Perennial herb. Occasional in wet disturbed areas. 5000-7000 ft. Vicinity of Mile Creek, Rattlesnake Canyon, vicinity of Jenks Lake. *Gross* 4035.
- Deschampsia cespitosa* (L.) Beauv. subsp. *cespitosa*, tufted hairgrass, Perennial herb. Uncommon in wet meadows. 6700-8000 ft. Sugarloaf Meadow, Fish Creek. *Fraga* 2429.
- Deschampsia danthonioides* (Trin.) Munro in Benth., annual hairgrass, Annual. Uncommon in moist areas. 6600 ft. South base of Sugarloaf Mountain. *Munz* 17101.
- Deschampsia elongata* (Hook.) Munro in Benth., slender hairgrass, Perennial herb. Occasional near springs and streams. 5200-8600 ft. Mile Creek, Barton Creek, Staircase Canyon, Barton Flats, Jenks Lake, South Fork, Wildhorse Creek, Lightning Gulch, Cienega Seca Creek, Big Meadows, Fish Creek. *Gross* 4152.
- Elymus x hansenii* Scribn., Perennial herb. Uncommon in disturbed area under pines. 6200 ft. Near South fork campground. Hybrid between *E. elymoides* and *E. glaucus*. *Fraga* 2541.
- Elymus condensatus* C. Presl, giant wildrye, Perennial herb. Seepy, springy area. 5240 ft. Only one collection within the study area from the vicinity of Seven Oaks. *Mistretta* 4074.
- Elymus elymoides* (Raf.) Swezey, squirrel tail, Perennial herb. Common in dry places in pine understory. 6000-9500 ft. Barton Flats, Forsee Creek Trail, Radford Road, Cienega Seca Creek, Sugarloaf Mountain, South Fork Campground, Wildhorse Road, Heart Bar, Coon Creek. Three varieties have been identified as occurring in the study areas including var. *brevifolius*, var. *californica*, and var. *elymoides*. *White* 13181.
- Elymus glaucus* Buckley subsp. *glaucus*, blue wild rye, Perennial herb. Occasional on dry slopes and flats. 6300-7700 ft. Mile Canyon, Staircase Canyon, Lost Creek, Wildhorse Creek, Fish Creek. *Gross* 4164.
- \**Elymus hispidus* (Opiz) Melderis, intermediate wheatgrass, Perennial herb. Uncommon in open areas, roadsides. 5400-6000 ft. Stetson Creek, Barton Creek, Hathaway Flat. [*Elytrigia intermedia* (Host) Nevski var. *intermedia*]. *Sanders* 17412.
- Elymus lanceolatus* (Scribn. & J. G. Smith) Gould subsp. *lanceolatus*, thick-spike wheat grass, Perennial herb. Uncommon in open sites in pine forest understory. 8000 ft. Fish Creek Meadows. *Davidson* 4552.
- Elymus multisetus* (J. G. Smith) Burt Davy, Big squirrel tail, Perennial herb. Uncommon on dry flats. 6600 ft. Barton Flats. *Dunkle* 4038.
- Elymus ponticus* (Podp.) N. Snow, tall wheat grass, Perennial herb. Uncommon in disturbed, often alkaline areas. 6100-7000 ft. Staircase Canyon and

Cienega Seca Creek. [*Elytrigia elongata* (Host) Nevski; *Elytrigia pontica* (Podp.) Holub; *Thinopyrum ponticum* (Podp.) Barkworth & D.R. Dewey]. *Mistretta* 3927.

***Elymus trachycaulus*** (Link) Shinn. subsp. *trachycaulus*, slender wheatgrass, Perennial herb. Uncommon in mesic to dry meadow edges. 6000-7000 ft. Stetson Creek, South Fork, Wildhorse Creek, Heart Bar. *White* 719 (UCR).

***Elymus triticoides*** Buckley, beardless wild rye, Perennial herb. Uncommon in areas adjacent to meadows and streams. 5500-7800 ft. Hamilton Creek, Barton Creek, Wildhorse Canyon, Lightning Gulch, Cienega Seca Creek, Big Meadows, Heart Bar. *Fraga* 2588.

***Eragrostis pectinacea*** (Michx.) Nees var. *pectinacea*, tufted love grass, Annual. Rare in wet areas along streams. 5000-5600 ft. Vicinity of Seven Oaks. *Roos* 10386 (UCR).

\****Festuca arundinacea*** Schreb., tall fescue, Perennial herb. Occasional in disturbed areas. 5000-7500 ft. Vicinity of Mile Creek, vicinity of Camp Radford, Sugarloaf Meadow. *Gross* 4034.

***Festuca californica*** Vasey, California fescue, Perennial herb. Occasional in openings in forests, meadows. 5900-8500 ft. Near Round Cienega Creek, Hathaway Flat, canyon north of Cienega Seca Creek. Smaller plants with more or less glabrous collars have been called *Festuca californica* var. *parishii* (Piper) Hitchc. *Gross* 4000.

***Festuca kingii*** (S. Watson) Cassidy, spike fescue, Perennial herb. Occasional on open dry slopes. 7200-8200 ft. Barton Flats, east of Jenks Lake, South Fork, Lightning Gulch, Cienega Seca Creek, Heart Bar. *Wood* 918.

***Festuca microstachys*** (Nutt.), small fescue, Annual. Occasional in dry open areas. 5800-6100 ft. Vicinity of Barton Flats, Burro Flats, Round Cienega Creek. [*Vulpia microstachys* (Nutt.) Munro var. *ciliata* (Beal) Lonard & Gould; *Vulpia microstachys* var. *confusa* (Piper) Lonard & Gould; *Vulpia microstachys* var. *microstachys*; *Vulpia microstachys* var. *pauciflora* (Beal) Lonard & Gould]. *Mistretta* 3722.

\****Festuca myuros*** L., rattail fescue, Annual. Occasional in open disturbed areas. 5600-6800 ft. Round Cienega Creek, east of Burro Flats, Big Meadows. [*Vulpia myuros* (L.) C.C. Gmel. var. *hirsuta*] *Mistretta* 3644.

***Festuca rubra*** L., red fescue, Perennial herb. Occasional in understory of subalpine forest. 4900-8800 ft. Pinezanita, Seven Oaks, Hamilton Creek, vicinity of South Fork Campground, Wildhorse Meadows, Cienega Seca Creek, Fish Creek, Coon Creek. *Fraga* 2752.

***Glyceria elata*** (Nash) A. Hitchc., fowl manna grass, Perennial herb. Occasional in shady riparian areas. 6000-6500 ft. Vicinity of Burro Flats, Frog Creek, Jenks Lake Road, South Fork. *Mistretta* 3519.

\****Holcus lanatus*** L., common velvet grass, Perennial herb. Common in disturbed places in riparian habitat. 5200-8000 ft. Barton Creek, Santa Ana River,

Sugarloaf Meadow, Cienega Seca. *Fraga* 3103.

***Hordeum brachyantherum*** Nevski subsp. ***brachyantherum***, northern barley, Perennial herb. Uncommon in meadows. 7800-8400 ft. Wildhorse Creek, Cienega Seca. *Wood* 1148.

***Hordeum brachyantherum*** Nevski subsp. ***californicum*** (Covas & Stebbins) Bothmer, N. Jacobsen, & Seberg, California meadow barley, Perennial herb. Uncommon along meadow edges. 8500-8700 ft. Wildhorse Meadows. *Mistretta* 5475a.

***Hordeum jubatum*** L., foxtail barley, squirreltail barley, Perennial herb. Uncommon in moist fields and disturbed areas. 5500-8000 ft. Stetson Creek, Cienega Seca. *Wood* 1147.

\****Hordeum murinum*** L. subsp. ***glaucum*** (Steud.) Tzvelev, smooth barley, Annual. Uncommon in disturbed areas. 5200-6200 ft. Vicinity of Seven Oaks, Staircase Canyon. *Mistretta* 3942.

***Koeleria macrantha*** (Ledeb.) J. A. Schultes, june grass, Perennial herb. Occasional on open areas in pine forest. 5700-8800 ft. Round Cienega Seca, East Fork of Barton Creek, Barton Flats, Big Meadows, Lightning Gulch, Cienega Seca, Heart Bar, Mission Springs Campground. *Fraga* 3074.

\****Lolium perenne*** L., English rye grass, Perennial herb. Uncommon along streams in open areas. 6400-6500 ft. East Fork of Hamilton Creek, Fish Creek. *Mistretta* 3770.

***Melica aristata*** Bolander, bearded melic, Perennial herb. Uncommon in dry open woods. 6680 ft. Vicinity of Forsee Creek Trailhead. *Mistretta* 3266.

***Melica imperfecta*** Trin., small flowered melicgrass, Perennial herb. Occasional on open rocky slopes. 5400-7600 ft. Vicinity of Seven Oaks, Mile Creek, Radford Road, Wildhorse Canyon, Cienega Seca Creek. *Wood* 985.

***Melica stricta*** Bol., nodding melica, Perennial herb. Occasional on dry rocky slopes. 6200-8500 ft. Vicinity of Sugarlump Peak, Barton Flats, Cienega Seca, Heart Bar Creek, Fish Creek, Coon Creek. *De Groot* 6135.

***Muhlenbergia andina*** (Nutt.) A. Hitchc., foxtail muhly, Perennial herb. Uncommon in mesic meadows and along streams. 6000-7000 ft. Barton Flats, Lost Creek, Cienega Seca Creek. *Wood* 1233.

***Muhlenbergia asperifolia*** (Nees & Meyen) Parodi, scratchgrass, Perennial herb. Occasional on meadow edges and along streams. 5200-8100 ft. Vicinity of Seven Oaks, Sugarloaf Meadow, Big Meadows, Heart Bar, Cienega Seca. *Mistretta* 4070.

***Muhlenbergia fliformis*** (Thurber) Rydb., scratchgrass, Annual. Occasional near meadows and streams. 6000-8400 ft. Barton Flats, South Fork Campground, Big Meadows, Wildhorse Meadows. *Gross* 3522.

***Muhlenbergia richardsonis*** (Trin) Rydb., matted muhly, Perennial herb. Occasional on meadow edges. 6500-8600 ft. Forsee Creek Trail, South Fork

Trailhead, Wildhorse Meadow, Big Meadows, Cienega Seca Creek, Heart Bar, Fish Creek. *Gross* 4147.

***Muhlenbergia rigens*** (Benth.) Hitchc., deergrass, Perennial herb. Uncommon on dry benches above streams. 6100-6500 ft. Round Cienega Creek drainage, Barton Flats. *Mistretta* 4139.

***Phragmites australis*** (Cav.) Steud., common reed, Perennial herb. Uncommon in open areas in drainages. 5400 ft. Sand Canyon. *Stoughton* 620.

\****Piptatherum miliaceum*** (L.) Coss., smilo grass, Perennial herb. Uncommon in wet areas. 5000 ft. Vicinity of Mile Creek. *Gross* 4029.

***Poa atropurpurea*** Schreb. x ***Poa pratensis*** L., Perennial herb. Uncommon in moist meadow. 8700 ft. Upper Wildhorse Meadow. *White* 12955.

\****Poa annua*** L., annual bluegrass, Annual. Uncommon in moist disturbed areas. 5200-7000 ft. Vicinity of Seven Oaks, south base of Sugarloaf Mountain, Big Meadows. *Mistretta* 3339B.

†***Poa atropurpurea*** Scribner, San Bernardino bluegrass, Perennial herb. Rare in meadows. 8000-8700 ft. Upper Wildhorse Meadow, Cienega Seca. *White* 12956.

\****Poa bulbosa*** L., bulbous bluegrass, Perennial herb. Occasional in disturbed areas. 5200-6000 ft. Round Cienega Creek, Seven Oaks, Barton Creek. *Fraga* 2810.

***Poa compressa*** L., Canada bluegrass, Perennial herb. Uncommon along streams and creeks. 4900-8200 ft. West of Seven Oaks, Rattlesnake Creek, vicinity of Poopout Hill, Mission Springs Campground. *Fraga* 2769.

***Poa fendleriana*** (Steudel) Vasey subsp. ***longiligula*** (Scribn. & Williams) Soreng, muttongrass, Perennial herb. Occasional in forest understory. 5200-9950 ft. Round Cienega Creek, East Fork of Hamilton Creek, Barton Creek, Big Meadows. *Mistretta* 3780.

***Poa howellii*** Vasey & Scribn., Howell's bluegrass, Annual. Uncommon on dry shaded slopes. 4800-5500 ft. Vicinity of Pinezanita, Stetson Creek, Round Cienega Creek. *Gross* 4022.

\****Poa palustris*** L., fowl blue grass, Perennial herb. On slopes and along streams. 5500-7000 ft. Stetson Creek, Round Cienega Creek, east of Camp Radford, Staircase Canyon, Barton Creek, South Fork Trailhead, vicinity of Jenks Lake, South Fork Campground, Fish Creek. *Gross* 3509.

\****Poa pratensis*** L., Kentucky bluegrass, Perennial herb. Common along streams and meadows. 5500-8400 ft. Mile Creek, Rattlesnake Creek, Burro Flats, Barton Creek, South Fork Campground, Sugarloaf Meadow, Wildhorse Creek, Lightning Gulch, Big Meadows, Heart Bar, Fish Creek, Coon Creek, Mission Springs Meadow, Cienega Seca. *Fraga* 2673.

***Poa secunda*** J. Presl subsp. ***secunda***, one sided blue grass, Perennial herb. Occasional in understory of pine forest. 4900-9700 ft. Vicinity of Seven Oaks,

east of Camp Radford, Barton Flats Campground, South Fork Trailhead, Sugarloaf Meadow, Wildhorse Meadow, east ridgeline of Sugarloaf Mountain. *Fraga* 2775.

\**Polypogon monspeliensis* (L.) Desf., annual beard grass, Annual. Occasional along streams and in springs. 5000-6900 ft. Vicinity of Mile Creek, Wildhorse Trail, vicinity of Big Meadows. *Gross* 4030.

†*Sphenopholis obtusata* (Michaux) Scribner, prairie wedgescale, Perennial herb. Rare on silty soil of creek bottom. 6500 ft. South Fork Public Camp. *Munz* 12057.

*Sporobolus contractus* A. Hitchc., spike dropseed, Perennial herb. Uncommon on stream edges. 6870 ft. Cienega Seca Creek. *White* 13242B.

*Sporobolus cryptandrus* (Torr.) A. Gray, sand dropseed, Perennial herb. Uncommon on open dry slopes. 5100-7200 ft. Seven Oaks, vicinity of South Fork Campground, Wildhorse Trail, Cienega Seca Creek. *Fraga* 2526.

\**Stenotaphrum secundatum* (Walter) Kuntze, St. Augustine grass, Perennial herb. Disturbed roadside. 5000-5100 ft. East of Clarks Ranch off Seven Pine Road. *Wood* 2650.

*Stipa comata* Trin. & Rupr. subsp. *comata*, needle and thread grass, Perennial herb. Dry open places. 6100-8200 ft. Hill Ranch Road, Barton Flats, South Fork Campground, Cienega Seca Creek, Heart Bar, canyon northwest of Cienega Seca, Fish Creek, vicinity of Mission Springs Campground. *Mistretta* 3815.

*Stipa coronata* Thurb., Giant Stipa, Perennial herb. Occasional on open dry slopes. 5400-7300 ft. Seven Oaks, Hathaway Flat, Wildhorse Canyon Trail, Heart Bar, Cienega Seca Creek. *Fraga* 2522.

*Stipa hymenoides* Roem. & Schult., Indian rice grass, Perennial herb. Occasional on open dry slopes. 7000-8800 ft. Vicinity of Barton Flats, Sugarloaf Mountain, Hart Bar. *Mistretta* 3444.

*Stipa latiglumis* Swallen, Sierra needlegrass, Perennial herb. Uncommon on dry slopes. 6800 ft. Vicinity of Jenks Lake. *Mistretta* 3298.

*Stipa lemmonii* (Vasey) Scribn., Lemmon's needlegrass, Perennial herb. Occasional on dry slopes. 5500-6500 ft. Round Cienega Creek, Creek, Stetson Creek, Barton Flats, Jenks Lake. *Mistretta* 3784.

*Stipa lettermanii* Vasey, Letterman's needlegrass, Perennial herb. Occasional on dry benches, slopes, and flats. 6000-8400 ft. Stetson Creek, Barton Flats, Jenks Lake, Lost Creek, South Fork Campground, Wildhorse Meadow, Heart Bar. *Gross* 4205.

*Stipa occidentalis* Thurber, western needlegrass, Perennial herb. Occasional on dry slopes in mixed forest. 5700-8000 ft. Three varieties have been identified as occurring in the study areas including var. *californica*, var. *pubescens*, var. *occidentale*. *Fraga* 2319.

- Stipa parishii*** Vasey, Parish's needlegrass, Perennial herb. Occasional on open dry slopes. 6200-8500 ft. Sugarlump Peak, western ridgeline of Sugarloaf Mountain, Radford Road, Rattlesnake Creek, road to Sugarloaf Meadow, beginning of Wildhorse Trail, Coon Creek, Cienega Seca Creek. *Mistretta 3452*.
- Stipa pinetorum*** M. E. Jones, pine needlegrass, Perennial herb. Uncommon on open dry slopes. 7000-9000 ft. Along trail from Wildhorse Spring to Sugarloaf Mountain. *Sanders 15076 (UCR)*.
- Stipa speciosa*** Trin. & Rupr., desert needlegrass, Perennial herb. Occasional on open dry slopes. 6000-8000 ft. Sugarloaf Meadow, Cienega Seca. *Wood 934*.
- Trisetum canescens*** Buckley, nodding oatgrass, Perennial herb. Rare in open areas under pines. 6000-7000 ft. Barton Flats. *Roos 3715 (UCR)*.
- \**Triticum aestivum*** L., common wheat, Annual. Rare in open areas in mixed forest. 6800 ft. Santa Ana Canyon, Jenks Lake. *Mistretta 3310*.

#### POTAMOGETONACEAE

- Potamogeton foliosus*** Raf. subsp. ***foliosus***, leafy pondweed, Aquatic perennial herb. Uncommon in pools of water. 6700 ft. Jenks Lake. *Wood 2437*.
- Potamogeton nodosus*** Poiret, longleaf pondweed, Aquatic perennial herb. Uncommon in pools of water. 6700 ft. Jenks Lake. *Thorne 53699*.

#### RUSCACEAE

- Maianthemum stellatum*** (L.) Link, starry false lily of the valley, Geophyte. Occasional in wet places. 6300-8000 ft. Staircase Canyon, Barton Flats, Wildhorse Creek; Lightning Gulch, Coon Creek, Mission Springs Meadow. *De Groot 6099*.
- Maianthemum racemosa*** (L.) Link, feathery false lily of the valley, Perennial herb. Uncommon in moist areas. 5800 ft. Burro Flats. *Templeton sn. (July 18, 1932)*.

#### THEMIDACEAE

- Bloomeria crocea*** (Torr.) Coville var. ***crocea***, golden stars, Geophyte. Occasional in open places in pine forests. 5200-6800 ft. Cold Creek, vicinity of Jenks Lake. *Mistretta 3319*.
- Dichelostemma capitatum*** (Benth.) Alph. Wood, bluedicks, Geophyte. Uncommon in open areas. 5600 ft. Burro Flats. *Mistretta 3648*.

*Muilla maritima* (Torr.) S. Watson, common muilla, Geophyte. Occasional in open areas under pines. 5000-6600 ft. Seven Oaks, Barton Flats, Jenks Lake, Burro Flats, Wildhorse Canyon. *Wood 1000.*

*Typha domingensis* Pers., narrowleaf cattail, Perennial herb. Uncommon at margin of ponded water. 6740 ft. Jenks Lake. *Wood 2248.*

*Typha latifolia* L., broadleaf cattail, Perennial herb. Uncommon in ponded water. 5000 ft. Vicinity of Seven Oaks and Clarks Ranch. *Wood 2677.*

## ZANNICHELLIACEAE

*Zannichellia palustris* L., horned pondweed, Aquatic perennial herb. Uncommon in pond water. 6740 ft. Jenks Lake. *Wood 2259.*