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Rancho Santa Ana Botanic Garden

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VASCULAR FLORA OF THE LIEBRE MOUNTAINS, WESTERN TRANSVERSE RANGES, CALIFORNIA

STEVE BOYD
Rancho Santa Ana Botanic Garden
1500 N. College Avenue
Claremont, Calif. 91711

ABSTRACT

The Liebre Mountains form a discrete unit of the Transverse Ranges of southern California. Geographically, the range is transitional to the San Gabriel Mountains, Inner Coast Ranges, Tehachapi Mountains, and Mojave Desert. A total of 1010 vascular plant taxa was recorded from the range, representing 104 families and 400 genera. The ratio of native vs. nonnative elements of the flora is 4:1, similar to that documented in other areas of cismontane southern California. The range is noteworthy for the diversity of Quercus and oak-dominated vegetation. A total of 32 sensitive plant taxa (rare, threatened or endangered) was recorded from the range.

Key words: Liebre Mountains, Transverse Ranges, southern California, flora, sensitive plants.

INTRODUCTION

The Transverse Ranges are one of southern California's most prominent physiographic features. In contrast to California's other principal cordillera—the Sierra Nevada, Coast Ranges, and Peninsular Ranges—which are oriented north-south, the Transverse Ranges trend east-west. East-west trending ranges are uncommon in North America, and geologic mechanisms responsible for the anomalous orientation of California's Transverse Ranges are not yet fully understood (Norris and Webb 1990). Major units of the Transverse Ranges include, from east to west, the Little San Bernardino, San Bernardino, San Gabriel, Santa Monica, Liebre, Santa Susana, Topatopa, Pine Mountain, and Santa Ynez ranges. Technically, this enumeration should include the northern group of Channel Islands, which are geologically an extension of the Santa Monica Mountains. The Transverse Ranges cover a linear distance of nearly 520 km (320 mi) between their western end at Point Arguello near Santa Barbara and their eastern terminus in the Eagle Mountains near Desert Center (Sharp 1972; Norris and Webb 1990). Physical breaks between the component ranges are often obscure and a rather diverse array of names has been applied to various configurations, particularly in the western portion where circumscription of physiographic units is complicated by convergence of the Tehachapi and Inner Coast ranges.

Although the Transverse Ranges border the Los Angeles Basin, California's most densely populated region, and have been the subject of considerable botanical exploration over the years, published floristic accounts of the component ranges are surprisingly scarce. Broad-scale floristic reports for the San Gabriel Mountains include Johnston's (1919) flora of the pine belt and Peirson's (1935) handbook of trees and shrubs. Published documentation of the San Bernardino Mountains is little better, limited to Parish's (1917) enumeration of the pteridophytes and spermatophytes and McBride et al.'s (1975) checklist for the montane coniferous forest. By far the best-documented element of the Transverse Ranges has been the Santa Monica Mountains, which have been comprehensively covered by Raven et al. (1986). While the body of floristic literature for the Transverse Ranges is certainly augmented by more narrowly focused local studies (e.g., Derby and Wilson 1978, 1979; Lewis and Gause 1966; Muns 1984, 1985a, 1985b, 1986, 1992, 1994; Parish 1890; Sawyer 1987; Swinney 1994) and unpublished technical reports and dissertations (Boyd et al. 1993; Krantz 1994; Mistretta 1995; Robinson 1953; Thorne 1971–1973), many segments of the range remain virtual floristic terra incognita.

The threat to southern California's native flora from urbanization, agriculture, pollution, habitat fragmentation, and invasive exotic taxa is pervasive and growing. Regions such as the Transverse Ranges contain large tracts of natural habitat that are biologically diverse, relatively intact ecologically, and mostly administered in public trust; these areas are vital for meeting societal goals of preserving California's natural heritage. A critical component of any strategy for managing regional biological diversity is developing a baseline account of the resources being managed. Presently, work is ongoing to provide comprehensive documentation for both the San Gabriel Mountains (O. Mistretta, pers. comm.) and San Bernardino Mountains (A. Sanders, pers. comm.). In this paper, I present a preliminary floristic account of another important segment of the Transverse Ranges, the Liebre Mountains.
region. The study includes the results fieldwork conducted by myself and/or Timothy S. Ross, with various associates, as well as review of collections housed in the herbarium of Rancho Santa Ana Botanic Garden (RSA-POM) and elsewhere.

PHYSICAL SETTING

Physiography

The Liebre Mountains represent the easternmost end of what is referred to collectively as the Western Transverse Ranges (Hickman 1993), and they occupy a transitional position between the Santa Susana, Topatopa, and Pine Mountain ranges to the west and San Gabriel Range to the east. The northern base of the Liebre Mountains defines the southwestern border of the Mojave Desert. As circumscribed here, the range is a roughly triangular area bounded by the Santa Clara River on the south and southeast, California Aqueduct along the north and northeast, and Interstate 5 along the west (Fig. 1). The study area encompasses approximately 1630 km² (613 mi²), with elevation ranging between 1764 m (5788 ft) on Burnt Peak and 294 m (965 ft) where the Santa Clara River crosses Interstate 5.

Physiography of the Liebre Mountains region is strongly controlled by two of Southern California's major fault systems: the San Andreas on the north and northeast, and the San Gabriel on the west and south (Dibblee 1982). The eastern boundary of the range, and its general separation from the San Gabriel Mountains, is defined by the Soledad Fault. The range can be generally divided into two physiographically and geologically discrete parts; the rugged, mountainous north and northeastern section, and a lower area of rolling hills and small erosional valleys in the west and south (Dibblee 1982).

Portal Ridge (including Ritter Ridge), separates Antelope Valley, the westernmost end of the Mojave Desert, from the rift zone of the San Andreas Fault. The steep escarpments of this narrow, northwest-trending ridge system contrast sharply with the relatively gentle relief along its crest. At its northwest end, the ridge is
dissected by several drainages originating on the northern flanks of Liebre and Sawmill mountains, including Tentrock, Horse Camp, Cow Spring, and Kings canyons. From Kings Canyon southeastward, the crest of Portal Ridge continues unbroken to its southern terminus at Ritter Ridge. Drainage from the northern flank of Portal Ridge is northeastward into the Mojave Desert. The shorter, steeper drainages of the southern flank empty into the San Andreas Fault rift.

The massive San Andreas rift is characterized by a series of deep, elongate valleys separated from each other by low divides. From northwest to southeast these include Oakdale Canyon, Oakgrove Canyon, Pine Canyon, Leona Valley, and Anaverde Valley. The southern edge of the rift zone is marked by another series of steep escarpments comprising the Liebre-Sawmill-Sierra Pelona crest. These relatively narrow, elongate ridges, like Portal Ridge to the north, are characterized by extensive areas of gentle topography across their summits.

To the south of the Liebre-Sawmill-Sierra Pelona crest lies the body of the mountainous portion of the range. Topography is characterized by steep, rugged ridges and narrow, winding canyons. Important topographic features within this area include Del Sur Ridge, Jupiter Mountain, Tule Ridge, Red Mountain, Warm Springs Mountain, Sawtooth Mountain, Burnt Peak, and Red Rock Mountain. A series of subsidiary faults of generally northeast trend divide this block between the San Andreas and San Gabriel fault zones and are mirrored by the principal drainages of the range. These include Soledad, Mint, Bouquet, Elizabeth Lake, and San Francisquito canyons. Much of the western end of the range is drained by tributaries of Castaic Creek, while slopes on the extreme northwestern edge drain into Piru Creek. Ultimately, all drainage from the Liebre-Sawmill-Sierra Pelona crest southward drains to the Santa Clara River, and ultimately, the Pacific Ocean.

In addition to the principal drainages, some of which support year-round surface water, there are several large bodies of water within the range. Most of these represent manmade reservoirs, including Bouquet Reservoir, Castaic Lake, and Pyramid Lake. A large reservoir was once constructed in San Francisquito Canyon, but suffered a catastrophic failure of the earthen dam in 1928 (Sharp 1972). Natural permanent and seasonal lakes are restricted within the range to the valleys within the San Andreas Rift and adjacent Portal Ridge. These are fault sags and include Elizabeth Lake, Munz Lakes, Lake Hughes, and Quail Lake (the latter two now augmented by earthen dams), as well as Tweedy and Gookins lakes on Portal Ridge.

![AVERAGE PRECIPITATION 1948-1995](image)

**Fig. 2.** Graph of average monthly precipitation for Sandberg WSMO (located at ca. 34.75°N 118.73°W, elev. ca. 1376 m.) showing typical Mediterranean-climate pattern of winter rain and summer drought. Source WWW.Worldclimate.com.

**Geology**

The Liebre Mountains region is geologically complex (Jennings and Strand 1969). An excellent, detailed geologic overview of the range is provided by Dibblee (1982), and I will present only a brief synopsis here. The Liebre-Sawmill-Sierra Pelona crest and adjacent uplands are eroded largely from pre-Cenozoic basement complex, as are significant portions of Portal Ridge. Liebre Mountain itself is predominantly composed of granitic rocks, while Sawmill Mountain is dominated by gneiss. An extensive area of ancient Pelona schist nearly bisects the range from Sierra Pelona and adjacent Portal Ridge southwestward to San Francisquito Canyon. The lower, hilly regions to the west, south, and southeast of the Liebre-Sawmill-Sierra Pelona crest are characterized by Cenozoic sedimentary and volcanic rocks, these often highly deformed and eroded. The area occupied by these substrates represent two ancient depositional basins, the Ridge Basin along the west, and Soledad Basin along the southeastern edges of the range. These sediments were originally deposited under largely marine conditions. Subsequently, they have been extensively uplifted and deformed, resulting in areas of striking badlands topography, as well as the unusual formations in the Vasquez Rocks area near Agua Dulce.

**Climate**

The Liebre Mountains region experiences a typical Mediterranean-type climate of warm, dry summers and cool, moist winters. Under this regime, most precipitation falls as rain resulting from Pacific frontal storms during the months of November through March (Fig. 2). Winter snow, although generally light and short-lived, is frequent along the highest ridges of the Lie-
bre-Sawmill-Sierra Pelona crest. Exceptionally strong, cold storms bring snow to extensive areas above 1000 m, and sometimes even lower. While precipitation patterns are relatively uniform throughout the range, there is considerable variation in average annual precipitation between different sites (Table 1). Topography, regional rainshadow effects, marine layer penetration, and cold air drainage all exert their effect on local microclimates, and are reflected in the distribution of various floristic elements and vegetation types.

**HISTORY OF BOTANICAL EXPLORATION**

Based on herbarium specimens deposited at RSA and elsewhere, I have been able to document from the range, collections made by at least 188 individual primary collectors (excluding associated collectors) covering a span of more than one century (1883-1998). A majority of these are limited, ad hoc efforts, frequently restricted to areas serving as the principal transportation corridors of the time. It appears that the Liebre Mountains was not an area of intense floristic interest to earlier botanists. Aside from the present study’s efforts, very few collectors visited the range repeatedly over a series of years. Most notable of those who did include LeRoy Abrams, Elbert Benjamine, Anstruther Davidson, F. Raymond Fosberg, Ralph Hoffmann, Marcus E. Jones, Philip A. Munz, Frank W. Peirson, Bonnie C. Templeton, Ernest C. Twisselmann, and Louis C. Wheeler. A complete listing of primary collectors and their associates is presented in Table 2.

A summary of collecting activity by decade, as expressed by the number of specimens collected, and number of primary collectors, is presented in Fig. 3 and 4 respectively. It is readily apparent from these graphs that, exclusive of the present study, greatest interest and activity in the range was during the 1920s and 1930s. Work and travel restrictions during the war years of the 1940s clearly had considerable impact, drastically reducing botanical activity in the range. A slight renewed interest during the 1950s, 1960s, and 1970s, was followed by another decline during the 1980s. Except for the collecting efforts associated with this project, the downward trend would have continued during the present decade.

**VEGETATION**

The vegetation of the Liebre Mountains region is a complex mosaic superimposed upon a backdrop of the area’s diversity of geologic substrates, topography, and microclimate. The vegetation patterns of the range are further complicated by the past history of wildland fire and other disturbance, both natural and anthropogenic. While a detailed circumscription of vegetation was beyond the scope of this study, a brief overview is appropriate to place subsequent discussion of the flora

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**Table 1. Mean annual precipitation records.**

<table>
<thead>
<tr>
<th>Station mm (in)</th>
<th>Lat/long</th>
<th>Elev. m (ft)</th>
<th>Mean annual precip mm (in)</th>
<th>Record period</th>
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<tbody>
<tr>
<td>Acton-Escondido FC261</td>
<td>34.50°N</td>
<td>902 (2959)</td>
<td>272.9 (10.7)</td>
<td>1931-1995</td>
</tr>
<tr>
<td>Bouquet Canyon</td>
<td>34.58°N</td>
<td>933 (3061)</td>
<td>388.9 (15.3)</td>
<td>1940-1978</td>
</tr>
<tr>
<td>Dry Canyon Reservoir</td>
<td>34.48°N</td>
<td>443 (1453)</td>
<td>354.2 (13.9)</td>
<td>1931-1990</td>
</tr>
<tr>
<td>Elizabeth Lake</td>
<td>34.60°N</td>
<td>634 (2080)</td>
<td>559.7 (22.0)</td>
<td>1955-1972</td>
</tr>
<tr>
<td>Fairmont</td>
<td>34.70°N</td>
<td>932 (3057)</td>
<td>409.4 (16.1)</td>
<td>1931-1995</td>
</tr>
<tr>
<td>Neenach</td>
<td>34.80°N</td>
<td>881 (2890)</td>
<td>216.3 (8.5)</td>
<td>1931-1964</td>
</tr>
<tr>
<td>Newhall S FC32CE</td>
<td>34.38°N</td>
<td>378 (1240)</td>
<td>461.7 (18.2)</td>
<td>1931-1995</td>
</tr>
<tr>
<td>Pine Canyon PS FC321</td>
<td>34.66°N</td>
<td>1003 (3290)</td>
<td>474.4 (18.7)</td>
<td>1955-1972</td>
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<tr>
<td>Palmdale</td>
<td>34.58°N</td>
<td>791 (2595)</td>
<td>206.1 (8.1)</td>
<td>1931-1995</td>
</tr>
<tr>
<td>Sandberg Ptrl Stn</td>
<td>34.75°N</td>
<td>1226 (4022)</td>
<td>411.5 (16.2)</td>
<td>1931-1988</td>
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<tr>
<td>Sandberg WSMO</td>
<td>34.75°N</td>
<td>1376 (4514)</td>
<td>296.4 (11.7)</td>
<td>1948-1955</td>
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<tr>
<td>Saugus Power Plant 1</td>
<td>34.58°N</td>
<td>641 (2103)</td>
<td>465.3 (18.3)</td>
<td>1933-1995</td>
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<tr>
<td>Vincent F S FC120</td>
<td>34.48°N</td>
<td>955 (3133)</td>
<td>222.6 (8.8)</td>
<td>1931-1995</td>
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Table 2. Continued.

<table>
<thead>
<tr>
<th>Collectors</th>
<th>Years</th>
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<tr>
<td>N. C. Cooper</td>
<td>1943, 1948, 1949</td>
</tr>
<tr>
<td>T. Craig</td>
<td>1927, 1932, 1933</td>
</tr>
<tr>
<td>T. Craig w/M. Hilend</td>
<td>1927</td>
</tr>
<tr>
<td>C. C. Crampton</td>
<td>1941</td>
</tr>
<tr>
<td>? Crawford</td>
<td>1936</td>
</tr>
<tr>
<td>E. Crow</td>
<td>1929</td>
</tr>
<tr>
<td>K. Curran</td>
<td>1883</td>
</tr>
<tr>
<td>C. Davidson</td>
<td>1973, 1975</td>
</tr>
<tr>
<td>G. Davis</td>
<td>1967</td>
</tr>
<tr>
<td>M. DeDecker</td>
<td>1959</td>
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<tr>
<td>F. Detmers</td>
<td>1931</td>
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<tr>
<td>J. Denahue</td>
<td>1983</td>
</tr>
<tr>
<td>J. Doty</td>
<td>1969</td>
</tr>
<tr>
<td>R. L. Dressler</td>
<td>1949</td>
</tr>
<tr>
<td>? Dronovitch</td>
<td>1940</td>
</tr>
<tr>
<td>W. R. Dudley w/H. Lamb</td>
<td>1896</td>
</tr>
<tr>
<td>A. N. Dunn</td>
<td>1931</td>
</tr>
<tr>
<td>D. B. Dunn w/C. Epling</td>
<td>1946</td>
</tr>
<tr>
<td>A. D. E. Elmer</td>
<td>1902</td>
</tr>
<tr>
<td>D. E. Emery</td>
<td>1958</td>
</tr>
<tr>
<td>C. Epling</td>
<td>1927, 1937</td>
</tr>
<tr>
<td>C. Epling w/L. C. Wheeler</td>
<td>1933</td>
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<tr>
<td>P. C. Everett</td>
<td>1935, 1936, 1937</td>
</tr>
<tr>
<td>P. C. Everett w/E. K. Balls</td>
<td>1959</td>
</tr>
<tr>
<td>P. C. Everett w/N. E. Lolonis</td>
<td>1962</td>
</tr>
<tr>
<td>J. Ewan</td>
<td>1930</td>
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<tr>
<td>F. R. Fosberg</td>
<td>1930, 1931, 1932, 1983</td>
</tr>
<tr>
<td>R. C. Frampton</td>
<td>1952</td>
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<tr>
<td>N. French</td>
<td>1934</td>
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<tr>
<td>A. D. Gifford</td>
<td>1935</td>
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<td>G. Gluechaert</td>
<td>1937</td>
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<tr>
<td>H. Graham</td>
<td>1950</td>
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<td>G. B. Grant</td>
<td>1903</td>
</tr>
<tr>
<td>V. Grant</td>
<td>1955</td>
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<tr>
<td>V. Grant w/A. Grant</td>
<td>1952</td>
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<td>W. O. Griesel</td>
<td>1962, 1963</td>
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<td>W. O. Griesel w/B. Miller</td>
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<td>1977, 1978</td>
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<td>R. Gustafson w/C. Davidson</td>
<td>1977</td>
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<td>R. Gustafson w/Gary Wallace</td>
<td>1982</td>
</tr>
<tr>
<td>H. M. Hall</td>
<td>1902</td>
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<td>H. M. Hall w/G. R. Hall</td>
<td>1908</td>
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<td>H. M. Hall w/H. P. Chandler</td>
<td>1902, 1906</td>
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<td>C. B. Hardham</td>
<td>1959</td>
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<td>? Hasse</td>
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<td>1966, 1972, 1979</td>
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<td>1928</td>
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<td>J. Hirshberg w/T. Glenn</td>
<td>1990</td>
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<td>C. L. Hitchcock</td>
<td>1928, 1952</td>
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<td>M. Hood</td>
<td>1939</td>
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<td>1933</td>
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<td>A. Lewis</td>
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<td>1960</td>
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<td>1988</td>
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<td>R. E. Riefler</td>
<td>1996</td>
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<tr>
<td>H. D. Ripley w/ R. C. Barneby</td>
<td>1942, 1944</td>
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<tr>
<td>L. S. Rose</td>
<td>1968</td>
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<tr>
<td>T. S. Ross w/ D. Banks</td>
<td>1994, 1995</td>
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<tr>
<td>T. S. Ross w/ J. M. Porter</td>
<td>1995</td>
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<tr>
<td>T. S. Ross w/ O. Mistretta &amp; A. Quici</td>
<td>1990</td>
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<tr>
<td>T. S. Ross w/ S. Boyd, O. Mistretta, P. Frisch, &amp; A. Quici</td>
<td>1990</td>
</tr>
<tr>
<td>T. S. Ross w/ S. Boyd &amp; L. Arnseth</td>
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</tr>
<tr>
<td>T. S. Ross w/ S. Boyd &amp; P. Frisch</td>
<td>1990</td>
</tr>
<tr>
<td>T. S. Ross w/ S. Boyd &amp; S. Burns</td>
<td>1994</td>
</tr>
<tr>
<td>T. S. Ross w/ V. W. Steinmann</td>
<td>1995</td>
</tr>
<tr>
<td>G. B. Rossbach</td>
<td>1955</td>
</tr>
<tr>
<td>F. Runyan</td>
<td>1955, 1971, 1973</td>
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<tr>
<td>H. G. Rush</td>
<td>1948</td>
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<td>V. Rutherford</td>
<td>1948</td>
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<td>R. A. Schlisling</td>
<td>1972</td>
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<tr>
<td>C. G. Schweitzer</td>
<td>1931</td>
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<tr>
<td>C. W. Sharsmith</td>
<td>1931</td>
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<tr>
<td>M. Shaw w/ E. Spaulding, Mrs. C. L. Walton</td>
<td>1917</td>
</tr>
<tr>
<td>J. R. Shevock</td>
<td>1971, 1972</td>
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<td>A. Simontacchi</td>
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<td>G. E. Sindel</td>
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<td>G. Sphon</td>
<td>1955, 1950</td>
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<td>G. Sphon w/ Diane Hearn</td>
<td>1956</td>
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<td>E. E. Stanford</td>
<td>1926, 1927</td>
</tr>
<tr>
<td>B. D. Stark</td>
<td>1930, 1933</td>
</tr>
<tr>
<td>V. W. Steinmann w/ T. S. Ross</td>
<td>1995</td>
</tr>
<tr>
<td>P. Stockwell</td>
<td>1935, 1936</td>
</tr>
<tr>
<td>H. H. Stone</td>
<td>1996</td>
</tr>
<tr>
<td>B. C. Templeton w/ H. J. Andrews</td>
<td>1938</td>
</tr>
<tr>
<td>B. C. Templeton w/ W. Clokey</td>
<td>1930</td>
</tr>
<tr>
<td>B. C. Templeton w/ W. Clokey &amp; C. B. Clokey</td>
<td>1930</td>
</tr>
<tr>
<td>D. Thomason</td>
<td>1987</td>
</tr>
<tr>
<td>D. M. Thompson</td>
<td>1992</td>
</tr>
<tr>
<td>H. J. Thompson</td>
<td>1951, 1954</td>
</tr>
<tr>
<td>R. F. Thorne</td>
<td>1963</td>
</tr>
<tr>
<td>R. F. Thorne w/ C. W. Tilforth</td>
<td>1971</td>
</tr>
<tr>
<td>G. H. True</td>
<td>1931, 1935, 1936</td>
</tr>
<tr>
<td>S. R. Tyson</td>
<td>1940</td>
</tr>
<tr>
<td>? Venkatesh</td>
<td>1957</td>
</tr>
<tr>
<td>M. Vincent</td>
<td>1962</td>
</tr>
<tr>
<td>H. A. Wahl</td>
<td>1956</td>
</tr>
<tr>
<td>G. D. Wallace</td>
<td>1966, 1979</td>
</tr>
<tr>
<td>A. Watry</td>
<td>1931</td>
</tr>
<tr>
<td>W. G. Webb</td>
<td>1935</td>
</tr>
<tr>
<td>D. Weins</td>
<td>1953, 1960</td>
</tr>
</tbody>
</table>
Table 2. Continued.

<table>
<thead>
<tr>
<th>Collector(s)</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. D. White w/P. Devries</td>
<td>1998</td>
</tr>
<tr>
<td>S. D. White w/S. Leatherman</td>
<td>1998</td>
</tr>
<tr>
<td>W. Wisura</td>
<td>1991</td>
</tr>
<tr>
<td>W. Wisura w/D. Kelly</td>
<td>1986</td>
</tr>
<tr>
<td>W. Wisura w/J. Dolan</td>
<td>1990</td>
</tr>
<tr>
<td>W. Wisura w/W. Steinmetz</td>
<td>1993</td>
</tr>
<tr>
<td>C. B. Wolf w/B. D. Stark</td>
<td>1933</td>
</tr>
<tr>
<td>K. C. Zakar</td>
<td>1969</td>
</tr>
</tbody>
</table>

in its proper context. In the most general sense, the vegetation of the Liebre Mountains region can be divided into three broad, physiognomic units—scrub, woodland, and grassland—depending on whether the dominant plants are shrub, tree, or herbaceous species respectively. Within each unit, major and minor subunits may be recognized, and names have been variously assigned to these by botanists attempting to describe and classify California vegetation (e.g., Munz and Keck 1949, 1950; Thorne 1976; Holland 1986; Sawyer and Keeler-Wolf 1995). The most recent attempt at a statewide vegetation classification, that of Sawyer and Keeler-Wolf (1995), is floristically based. Although highly detailed, it nevertheless provides a workable scheme which will be followed here in discussing characteristic vegetation series within the Liebre Mountains region.

**Scrub Vegetation Series**

Scrub is the most abundant and diverse kind of vegetation within the range, and is characterized by a predominance of one or more species of shrubs and sub-shrubs. Tree species are absent, or of only minor importance. Scrub vegetation may be relatively uniform physiognomically from stand to stand, but species composition can vary greatly depending on factors such as seral stage, exposure, slope, substrate, and moisture availability. Characteristic shrub-dominated series found in the range are presented in Table 3. For convenience, these have been grouped into four physiognomic/ecological categories—chaparral, sage and sagebrush scrub, desert scrub, and riparian scrub.

**Chaparral.**—The dominant components of chaparral vegetation series are hard-wooded, evergreen, sclerophyllous shrubs. The composition and relative dominance of shrub species is highly variable between different series; however, the unifying physiognomic characteristic is the relatively dense, frequently impenetrable overstory of intricately branched shrubs. Chaparral vegetation series are the most common and diverse type of scrub vegetation found in the Liebre Mountains region, occurring throughout the elevational range and on most geologic substrates.

The most common and widespread chaparral series are those where *Adenostoma fasciculatum* (chapise) is dominant or codominant. These include chamise, chamise-bigberry manzanita (with *Arctostaphylos glauca*), chamise-Eastwood manzanita (with *Arctostaphylos glandulosa* ssp. *glaucomollis*), chamise-black sage (with *Salvia mellifera*), chamise-white sage (with *S. apiana*), chamise-cupleaf ceanothus (with *Ceanothus greggii* var. *vestitus*), chamise-hoaryleaf ceanothus (with *C. crassifolius*), chamise-wedgeleaf ceanothus (with *C. cuneatus* var. *cuneatus*), and scrub oak-chamise series (with *Quercus berberidifolia*). Although not dominant, *Adenostoma* is also important in

**Fig. 3.** Graph of number of specimens collected in the Liebre Mountains region by decade. Exclusive of our work during the 1990s, peak collecting occurred during the 1920s and 1930s with renewed interest in the 1960s.

**Fig. 4.** Graph of number of collectors (based on primary collector and exclusive of associates) taking specimens in the Liebre Mountains region by decade. Greatest period of activity is during the 1920s and 1930s.
Table 3. Scrub vegetation series of the Liebre Mountains region.

<table>
<thead>
<tr>
<th>Chaparral</th>
<th>Sage and sagebrush scrub</th>
<th>Desert scrub</th>
<th>Riparian scrub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bigberry manzanita</td>
<td>big sagebrush</td>
<td>creosote bush</td>
<td>mulefat</td>
</tr>
<tr>
<td>Birchleaf mountain mahogany-California buckwheat</td>
<td>black sage</td>
<td>Joshua tree</td>
<td>narrowleaf willow</td>
</tr>
<tr>
<td>Brewer oak</td>
<td>California buckwheat</td>
<td></td>
<td>scalebroom</td>
</tr>
<tr>
<td>Canyon live oak shrub</td>
<td>California buckwheat-white sage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise</td>
<td>California sagebrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-bigberry manzanita</td>
<td>California sagebrush-white-California buckwheat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-black sage</td>
<td>mixed sage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-cupleaf ceanothus</td>
<td>purple sage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-Eastwood manzanita</td>
<td>rubber rabbitbrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-hoaryleaf ceanothus</td>
<td>white sage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-wedgeleaf ceanothus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chamise-white sage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chaparral whitethorn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastwood manzanita</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoaryleaf ceanothus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior live oak shrub</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior live oak-canyon live oak shrub</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior live oak-scrub oak</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrub oak</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrub oak-birchleaf-mountain-mahogany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrub oak-chamise</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Scrub oak-chaparral whitethorne</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wedgeleaf ceanothus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

the birchleaf mountain-mahogany-California buckwheat series (with *Cercocarpus betuloides* and *Eriogonum fasciculatum*) and the scrub oak-birchleaf mountain-mahogany series. Although found throughout the range at nearly all elevations, series characterized by *Adenostoma* are most prevalent at the lower to mid-elevations, and on relatively xeric exposures.

Second in importance to chamise-dominated stands are those chaparral series where various shrub forms of *Quercus* species are dominant or codominant. These include Brewer oak (*Quercus garryana* var. *breweri*), canyon live oak shrub (*Q. chrysolepis*), interior live oak shrub (*Q. wislizeni* var. *frutescens*), interior live oak-canyon live oak shrub, interior live oak-chaparral whitethorn (*Ceanothus leucodermis*), interior live oak-scrub oak, scrub oak, and scrub oak-chaparral whitethorn series, as well as the scrub oak-chamise series mentioned above. Oak-dominated series are most prevalent at mid- to upper elevations, especially across the southern flank of the Liebre-Sawmill-Sierra Pelona crest. At lower elevations, scrub oak-dominated series are restricted to relatively mesic exposures.

Series dominated by species of *Arctostaphylos* or *Ceanothus* are of more limited distribution within the range, generally appearing as localized stands adjacent to mixed chamise or oak series. Most frequent are stands of the Eastwood manzanita and wedgeleaf ceanothus series. Stands of the hoaryleaf ceanothus series are restricted to the south-central edge of the range, between the Agua Dulce area and Soledad Canyon. Conversely, stands dominated by cupleaf ceanothus are largely restricted to the northern edge of the range, along Portal Ridge.

The understorey of chaparral series is equally variable with respect to the composition and abundance of annuals, perennial herbs, and suffruticos species. Nevertheless, a characteristic suite of chaparral understorey plants can be enumerated. Species generally associated with xeric exposures include *Lotus scoparius*, *L. strigosus*, *Helianthemum scaparium*, *Corethogyne filaginifolia* var. *filaginifolia*, *Pellaea mucronata*, *Gutierreria californica*, *G. sarothrae*, *Selaginella bigelovii*, *Stipa coronata*, *Chaenactis glabriuscula*, *Cryptantha muricata*, *C. intermedia*, *Lupinus hirsutissimus*, *L. sparsiflorus*, *L. truncatus*, *Phacelia cicutaria*, *P. distans*, *P. minor*, *Salvia columbariae*, *Camissonia californica*, *Mimulus brevipes*, *Galium angustifolium*, *Calystegia peirsonii*, *Helianthus gracilentus*, and *Solanum xanti*. Species generally associated with mesic exposures include *Sanicula crassicaulis*, *Gnaphalium filaginifolium*, *E. scoparius*, *Poa secunda*, *Marah fabaceus*, *M. macrocarpus*, *G. angustifolium*, *G. porrigens*, *Chenopodium californicum*, *Clarkia purpurea*, *C. unguiculata*, *C. cylindrica*, *Claytonia parviflora*, *C. perfoliata*, *Epilobium canum*, *Cryptantha microstachys*, *Erysimum capitatum*, *Phacelia ramosissima*, *Eucrypta chrysanthemifolia*, and *Tauschia arguta*. 


Sage and sagebrush scrub.—Compared with chaparral series, the sage and sagebrush scrub series are a lower-statured vegetation, being dominated by relatively soft-wooded, malacophyllous, facultatively drought-deciduous shrubs and subshrubs. Within the Liebre Mountains region, these scrub series exhibit a patchy distribution, often in close association with areas of chaparral. Best-developed stands are found at lower elevations at the southwestern end of the range. The Santa Clarita Valley area, including Newhall, Saugus, Valencia, and Aguadulce, probably supported the region’s most extensive development of sage and sagebrush scrub prior to urbanization.

Five shrub species, in various combinations of presence and relative dominance, characterize the majority of the sage and sagebrush scrub series represented in the range (Table 3). These include Salvia mellifera (black sage), Eriogonum fasciculatum (California buckwheat), Artemisia californica (California sagebrush), Salvia leucophylla (purple sage), and Salvia apiana (white sage). The most common and widespread series are those where Eriogonum fasciculatum is dominant or codominant. These include the California buckwheat, California buckwheat-white sage, and California sagebrush-California buckwheat series. Stands of the California buckwheat series are especially prevalent on the southern flank of Liebre Mountain, and are associated with areas of deep, loose decomposed granite. Stands of the purple sage series are well developed on sedimentary substrates at the western edge of the range, especially about Castaic Lake.

The sage and sagebrush series discussed above are largely characterized by shrub taxa of cismontane Californian affinity. Two other important members of the sage and sagebrush series are dominated by shrubs of more interior, Great Basin affinity. These are the big sagebrush and rubber rabbitbrush series. The big sagebrush series is dominated by Artemisia tridentata and exhibits a scattered, patchy distribution across the northern edge of the range. Stands are often encountered in areas of deeper soil with cold air drainage. This series is particularly common on the northern flank of Sierra Pelona, and valleys of the San Andreas Rift zone. The rubber rabbitbrush series is dominated by Chrysothamnus nauseosus, often with more than one variety of the species being present within a given stand. This series is also best developed along the northern edge of the range, especially at the margin of the Antelope Valley.

The understory within sage and sagebrush scrub series is generally better developed than in the various chaparral series, although overall species composition is similar.

Desert scrub.—Two shrub-dominated vegetation types characteristic of the Mojave Desert, the creosote bush and Joshua tree series, are represented within the Liebre Mountains region by small outlier stands (Table 3). The creosote bush series, with open stands of Larrea tridentata, occurs as scattered patches on xeric exposures of volcanic substrate at the northeastern end of the range, between Acton and Vincent. Associated with these stands are shrubs such as Juniperus californica, Ephedra nevadensis, Encelia actoni, Eriogonum fasciculatum var. longispina, Chrysothamnus nauseosus, Opuntia acanthocarpa, Krascheninnikovia lanana, Grayia spinosa, Salazaria mexicana, Eriogonum fasciculatum var. polifolium, Lycium cooperi, and Yucca whipplei. Notably absent is Ambrosia dumosa, a frequent associate of Larrea throughout the California deserts.


The Joshua tree series is named for its most physiognomically distinctive species, Yucca brevifolia. Stands most closely approaching the shrub species composition typically associated with this series within the Mojave Desert proper are found at the northeastern base of the range, near Palmdale and Harold. Common shrub associates here include Juniperus californica, Opuntia echinocarpa, Tetradytia axillaris var. longispina, Salazaria mexicana, Eriogonum fasciculatum var. polifolium, Grayia spinosa, Yucca whipplei, Ly­cium cooperi, and Salvia dorisii. Yucca brevifolia in this area is the typical variety, characterized by having a distinct monopodial growth form with well-branched crown.

Scattered stands of Yucca brevifolia occur across the northern edge of the range, where locally present within other vegetation series. Most of these small stands would probably not warrant mapping as Joshua tree series, however. An unusual manifestation of the Joshua tree series is found at the extreme northwestern end of the range. Here, Yucca brevifolia is strongly clonal, forming dense, impenetrable thickets. Even the largest “individuals” have poorly branched crowns. These plants represent the variety herbertii. Associated
shrubs are scarce within the thickets, but surrounding vegetation generally is a manifestation of the big sagebrush and rubber rabbitbrush series.

Understory taxa within the Joshua tree series, especially in the eastern stands, are similar to those of the creosote bush series.

*Riparian scrub.*—Vegetation associated with moist to wet soils of drainage courses, springs, and fluctuating lake margins, includes both shrub- and tree-dominated series. These are distributed across a variety of environmental gradients, including the nature and frequency of past flooding, fire, and other disturbance; the duration and reliability of surface water; the texture of alluvial overburden and depth to bedrock; and the stream gradient. As a general rule, areas with greater water availability, and less disturbance, tend to support tree-dominated vegetation. These will be addressed later in the context of woodland vegetation series. Portions of drainages with less reliable supplies of water, areas subject to more frequent scouring floods, and heavily or periodically disturbed situations are characterized by various shrub-dominated series, collectively treated here as riparian scrub.

Important kinds of riparian scrub in the Liebre Mountains region include the mulefat, narrowleaf willow, and scalebroom series (Table 3). The mulefat series, characterized by dense to open stands of *Baccharis salicifolia* (mulefat), is the most common and widespread of the three. It is common in the periodically flooded areas about the margins of lakes and reservoirs, and in minor drainages throughout the range. The narrowleaf willow series, characterized by *Salix exigua* (narrowleaf willow), is typically associated with locations with reliable sources of water near the soil surface, as about springs and along sluggish streams.

Stands of the scalebroom series, dominated by *Lepidospartium squamatum* (scalebroom), are generally restricted to relatively broad, low-gradient washes which are sandy and frequently scoured by seasonal floods. Historically, this was likely the predominant vegetation along portions of the Santa Clara River and the lower reaches of the Castaic, San Francisquito, Bouquet, Elizabeth Lake Canyon, and Mint Canyon drainages. Much of this habitat has been lost or radically altered by urbanization, sand and gravel mining, channelization, and agriculture. The best-developed remnants are now found in lower San Francisquito Canyon, and along the Santa Clara River downstream from the mouth of Soledad Canyon.

The scalebroom series is the most floristically diverse of the three basic kinds of riparian scrub found in the range. Common associates include *Brickellia californica, Ericameria linearfolia, Senecio flaccidus var. douglasii,* *Lotus scoparius,* and *Eriogonum fasciculatum var. foliolosum.* Other shrub elements which are frequently present include *Juniperus californica, Sambucus mexicana,* *Rhus triolobata,* *Artemisia tridentata var. parishii,* *Chrysothamnus nauseosus,* *Ribes aurum,* *Eriodictyon crassifolium* var. *nigrescens,* *Salvia apiana,* *Prunus ilicifolia,* and *Yucca whipplei.* Occasionally, a few trees may be scattered on the drier benches, especially *Quercus agrifolia,* *Platanus racemosa,* and *Populus fremontii.*


### Table 4. Woodland vegetation series of the Liebre Mountains region.

<table>
<thead>
<tr>
<th>Oak woodland</th>
<th>Conifer woodland</th>
<th>Riparian woodland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black oak</td>
<td>big cone Douglas fir</td>
<td>arroyo willow</td>
</tr>
<tr>
<td>Blue oak</td>
<td>big cone Douglas fir</td>
<td>California sycamore</td>
</tr>
<tr>
<td>Canyon live oak</td>
<td>California juniper</td>
<td>Fremont cottonwood</td>
</tr>
<tr>
<td>Coast live oak</td>
<td>foothill pine</td>
<td>mixed willow</td>
</tr>
<tr>
<td>Mixed oak</td>
<td>ponderosa pine</td>
<td>red willow</td>
</tr>
<tr>
<td>Valley oak</td>
<td>singleleaf pinon</td>
<td>white alder</td>
</tr>
</tbody>
</table>

**Woodland Vegetation Series**

Vegetation series dominated by arborescent species, although much less extensive in areal coverage than various types of scrub, nevertheless form an important part of the landscape throughout the Liebre Mountains region. Characteristic tree-dominated series found in the range are presented in Table 4. For convenience of...
discussion, these may be grouped into three broad types—oak woodland, conifer woodland, and riparian woodland. I have excluded from the discussion of woodland series, those situations where conifers have been established in artificial plantations by the National Forest.

Oak woodland.—The Liebre Mountains are noteworthy in the diversity of oak-dominated series found in the range (Table 3, 4). Important arborescent species of oaks include Quercus kelloggii (black oak), Q. douglasii (blue oak), Q. chrysolepis (canyon live oak), Q. agrifolia (coast live oak), and Q. lobata (valley oak) (Table 4).

The black oak series is best developed along the crest of Liebre and Sawmill mountains, although small stands are present at higher elevations along Sierra Pelona. Within the range, this series is characterized by rather open and savannalike stands of Quercus kelloggii, with scattered Q. chrysolepis. The broader openings are often characterized by local stands of Chrysothamnus nauseosus, Artemisia tridentata, Eriogonum fasciculatum, E. umbellatum var. munzii, and Ribes roezlii. Areas between clusters of trees exhibit a rich assemblage of herbaceous species, including Agoseris retorsa, A. grandiflora, Athysanus pusillus, Bloomeria crocea, Bromus hordeaceus, B. rubens, Calochortus venustus, Camissonia campestris, Clarkia purpurea, Corethogyne filagifolia, Elymus glaucus, E. elymoides, Epilobium brachycarpum, Erigeron foliosus, Eriogonum cithariforme, E. roseum, Eriophyllum confertiflorum, Gilia ochroleuca ssp. bizonata, Linanthus androsaceus ssp. micranthus, Nemophila menziesii, Penstemon centranthifolius, P. labrosus, P. rostriflorus, Phacelia davidsonii, Platystemon californicus, Thysanocarpus curvipes, T. lacinatus, and Vulpia microstachys. On northerly slopes, black oak woodland grades into mixed oak, canyon live oak, and big cone Douglas fir woodland, while on the southerly slopes it generally gives way to chaparral dominated by shrub species of Quercus, especially Q. wislizeni.

Stands of the blue oak series are limited to the northwestern end of the range, especially at the western end of Portal Ridge and in the vicinity of Sandberg on the northwestern foot of Liebre Mountain. Within the study area, this series is typically found on mesic exposures of gentle to moderately sloping hills and ridges, and is relatively open and savannalike. In addition to Quercus douglasii, the dominant tree, scattered individuals of Q. lobata and Pinus sabini ana are frequently present.

Most of the best-developed stands of the blue oak series are found on private ranch lands that were not accessible during the course of this study. Although similar overall to that of black oak woodlands, the herbaceous understory of the blue oak series remains poorly sampled within the range. Common shrub associates include Juniperus californica, Aesculus californica, Artemisia tridentata, Chrysothamnus nauseosus, and Quercus john-tuckeri.

Those stands of the blue oak series found in the range are among the most southerly known in California. I suspect the understory may support a number of additional taxa common to this vegetation association further north, but otherwise absent from the study area. Trees and arborescent shrubs suggesting intergradation between Quercus douglasii, Q. john-tuckeri, and Q. lobata are not uncommon at the northwestern end of the range, and were included in studies by Benson et al. (1967) of hybrid swarms in oaks.

The canyon live oak series is dominated by tree forms of Quercus chrysolepis, and is generally found within the Liebre Mountains at elevations above 1000 m. Best development within the range is on steep slopes with mesic exposures, particularly across the northern flank of Liebre-Sawmill-Sierra Pelona crest, and in upper Cold Canyon at the western end of Liebre Mountain. Within the range, the canyon live oak series is typically part of a complex vegetation mosaic which includes the black oak and big-cone Douglas fir series on mesic exposures, and various chaparral series on xeric slopes. Boundaries between the different vegetation assemblages are indistinct with considerable overlap in component species. Physiognomy of these woodland series is controlled by the relative abundance of the three principal tree species, Quercus chrysolepis, Q. kelloggii, and Pseudotsuga macrocarpa.

The canyon live oak series is characterized by dense stands of Quercus chrysolepis, with only scattered Q. kelloggii, or Pseudotsuga macrocarpa. The herbaceous understory is frequently rather poorly developed in stands with dense overstory crown cover, but may be diverse in relatively open stands. In general, shade-tolerant taxa, including Bromus grandiflora, A. californica, C. perfoliata, C. rubra, C. aggregata, D. plumosus patens ssp. montanum, Dryopteris arguta, Erythraea cruciata, E. umbellatum var. munzii, and E. sp. imperfecta. Within the range, this series is typically found on mesic exposures of gentle to moderately sloping hills and ridges, and is relatively open and savannalike. In addition to Quercus douglasii, the dominant tree, scattered individuals of Q. lobata and Pinus sabini ana are frequently present.

The coast live oak series is dominated by dense to open stands of Quercus agrifolia. Examples of this series may be found scattered across the southwestern quarter of the range, particularly in the larger, broader drainages, such as San Francisquito, Bouquet, and Mint canyons. The best-developed examples of the coast live oak series are most often found on deeper alluvial soils, at elevations below 1000 m. In many areas, trees have been thinned by cutting or clearing to produce open, parklike stands. These are often the
sites of rural residences. Other areas still support dense stands with nearly continuous crown cover. Depending on the frequency and intensity of past and present disturbance, the understory may be relatively depauperate and weedy, or support a rich assemblage of understory shrubs, perennial herbs, and annuals.

In the most-disturbed woodlands, especially those subjected to intense grazing, the understory is densely invaded by introduced annual grasses and forbs, especially *Bromus diandrus*, *B. hordeaceus*, *B. rubens*, *Avena barbata*, *Vulpia myuros*, *Centarea melitensis*, *Brassica geniculata*, and *Erodium cicutarium*. In less-disturbed situations, especially those stands on mesic slopes, an open to relatively dense shrub understory may be present. Frequent shrub associates include *Sambucus mexicana*, *Rhus trilobata*, *Toxicodendron diversilobum*, *Eriogonum fasciculatum*, and *Yucca whipplei*.

The composition and diversity of the herbaceous understory is equally variable, but may be quite rich in less-disturbed woodlands on mesic slopes. Common ferns include *Adiantum jordani*, *Pellaea andromedifolia*, *Pentagramma triangularis*, and *Dryopteris arguta*. Among the frequently encountered perennial grasses are *Elymus condensatus*, *E. glaucus*, *Melica imperfecta*, and *Poa secunda*. Other common perennial herbs include *Osmorhiza brachypoda*, *Sanicula crisicaulis*, *Tauschia arguta*, *Ambrosia psilostachya var. californica*, *Artemisia douglasiana*, *Cirsim occidentale*, *Corethogeine filaginifolia*, *Erigeron foliosus var. stenophyllus*, *Eriophyllum confertiflorum*, *Gnaphalium californicum*, *Solidago californica*, *Chenopodium californicum*, *Marah macrocarpus*, *Penstemon centranthifolius*, and *P. grinnellii* var. *scrophularioides*. Characteristic annuals include *Thysanocarpus curvipes*, *T. setiger*. *Ambrosia psilostachya var. californica*, *Artemisia douglasiana*, *Cirsim occidentale*, *Corethogeine filaginifolia*, *Erigeron foliosus var. stenophyllus*, *Eriophyllum confertiflorum*, *Gnaphalium californicum*, *Solidago californica*, *Chenopodium californicum*, *Marah macrocarpus*, *Penstemon centranthifolius*, and *P. grinnellii* var. *scrophularioides*. Characteristic annuals include *Thysanocarpus curvipes*, *T. setiger*.

Valley oak woodland, like blue oak woodland, is best developed at the northwestern end of the study area, although historically well-developed stands ranged southward along the western edge of the range into the Valencia and Saugus area. Typically, stands dominated by *Quercus lobata* are characterized by gentle relief and deep, often alluvial soils. The herbaceous and shrub understory of valley oak woodland is virtually identical to blue oak woodland, and to a lesser extent, black oak woodland.

**Conifer woodland.**—Relative to woodland series characterized by species of *Quercus*, natural vegetation dominated by arborescent conifers is limited in both areal and geographic extent within the range. Nevertheless, several distinctive series are locally important components in the Liebre Mountains vegetation mosaic (Table 4). The important coniferous trees include *Pseudotsuga macrocarpa* (big cone Douglas fir), *Juniperus californica* (California juniper), *Pinus sabiniana* (foothill pine), *P. ponderosa* (ponderosa pine), and *P. monophylla* (singleleaf pinyon).

Woodlands of the big cone Douglas fir and big cone Douglas fir-canyon live oak series are best developed in the steep, moist canyons draining the northern flank of Liebre and Sawmill mountains, but occur at scattered sites throughout the range in areas of similar habitat. In addition to *Pseudotsuga*, and to varying degrees, *Quercus chrysolepis*, other trees which are sometimes present include *Pinus sabiniana*, *P. ponderosa*, *Q. kelloggii*, and *Acer macrophyllum*. Across the northern flank of Liebre and Sawmill mountains, these woodlands are intimately associated with the canyon live oak and black oak series at the upper elevations, and the valley oak series near the foot of the slopes. Understory composition is virtually identical to that found in canyon live oak woodlands.

The California juniper series is found in the southeastern end of the Liebre Mountains region, but is best developed in the region between Agua Dulce and Acton. The dominant overstory species, *Juniperus californica*, is most often found as an arborescent shrub in the study area. It is discussed here, vs. with other shrub-dominated series, only because Sawyer and Keeler-Wolf (1995) specifically grouped this vegetation type with other tree-dominated series. Stands of the California juniper series are typically somewhat open and savannalike, with considerable open areas between clusters of *Juniperus*. The areas between junipers support an open, low scrub of *Eriogonum fasciculatum*, *Artemisia tridentata*, and *Chrysothamnus nauseosus*. The herbaceous understory may be fairly diverse, with numerous wildflowers, such as *Amsinckia menziesii*, *A. tesselata*, *Nemophila menziesii*, *Phacelia distans*, *Camissonia bistorta*, *Oenothera californica*, *Gilia spp.*, *Eriastrum sapphirinum*, *Layia glaucescens*, *L. nana*, and *Schismus barbatus*.

The California juniper series seems to be especially vulnerable to repeated fires with short return intervals. Most of the areas supporting this vegetation series within the study area occur outside of the National
Forest boundaries and are being rapidly degraded by fragmentation and fires associated by low-density semirural development.

The Foothill pine series, like the floristically related blue oak and valley oak series, reaches the southern limit of its distribution within the Liebre Mountains region. Vegetation dominated by *Pinus sabina* is confined to the northern edge of the range, along Portal Ridge and the northerly flank of Liebre and Sawmill mountains. In well-developed stands, the overstory may be dense to relatively open, but rarely forming the deeply shaded conditions seen in big cone Douglas fir and canyon live oak woodlands. Understory composition of the foothill pine series within the range is virtually identical to that of the blue oak and valley oak series.

The most limited conifer-dominated vegetation type in the range is the ponderosa pine series. Compared with the higher San Gabriel Mountains to the southeast, and Mount Pinos region to the northwest, native stands of *Pinus ponderosa* in the Liebre Mountains are small and floristically depauperate. Within the study area, this vegetation series is limited to the highest portions of the Sawmill Mountain summit, surrounded by more extensive stands of the black oak and big cone Douglas fir-canyon live oak series. Understory shrubs include *Chrysothamnus nauseosus*, *Ribes roezlii*, *Rhamnus tomentella*, *Eriogonum umbellatum*, *E. wrightii var. subscaposum*, and *E. fasciculatum*. The herbaceous understory is similar to that of the adjacent black oak series.

Singleleaf pinyon, *Pinus monophylla*, is found in two widely separated areas of the Liebre Mountains region, the northerly flank of Sierra Pelona south of Palmdale, and the steep, sedimentary hills at the northwestern corner of the range. Vegetation dominated by singleleaf pinyon is only found at the northwestern area, however. In addition to *Pinus monophylla*, common associated arborescent and shrub species include *Juniperus californica*, *Quercus john-tuckeri*, *Arctostaphylos glauca*, *Artemisia tridentata*, *Ephedra viridis*, *Salvia dorrri*, *Yucca whipplei*, *Y. brevifolia*, and *Cercocarpus betuloides*. Common herbaceous understory elements include *Lasthenia californica*, *Thysanocarpus lacinatus*, *T. curvipes*, *Poa secunda*, *Coreopsis bigelovii*, *Layia glandulosa*, *Phacelia distans*, *Claytonia* spp., and *Calochortus kennedyi*.

**Riparian woodland.**—Several tree-dominated vegetation series occur within the Liebre Mountains region (Table 4). As with riparian scrub, the riparian woodland series occur across a variety of environmental gradients. The floristic composition and relative dominance of component taxa may be correlated with the nature and frequency of past flood events and the duration and reliability of surface water, as well as the effects of fire and past anthropogenic disturbance. Collectively, the best development of riparian woodland series in the range may be found in the larger drainage systems, such as Castaic, Elizabeth Lake, San Franciscoquito, Bouquet, and Soledad canyons and their major tributaries. Riparian vegetation remains relatively intact within the portion of the range administered by the Angeles National Forest, but at lower elevations, especially near the confluence of the principal drainages with the Santa Clara River, there has been extensive clearing and channelization with subsequent loss of woodland.

**Grassland Vegetation Series**

Within the Liebre Mountains, there is less diversity of vegetation dominated by grasses and other herbaceous taxa as compared with the scrub and woodland series discussed above. Only four series are of regional importance in the range, the California annual grassland, nodding needle grass, common reed, and giant reed series.

California annual grassland is a floristically heterogeneous series, characterized by the physiognomic prevalence of annual grasses, especially introduced species. This broad category doubtless includes both natural, herb-dominated vegetation, and stands resulting from anthropogenic degradation of other scrub and woodland vegetation.

The most extensive development of California annual grassland within the range is found along the northern border of the study area, at the southern edge of the Antelope Valley, on Portal Ridge, Bald Mountain, and across the summits of the Liebre-Sawmill-Sierra Pelona crest. Although introduced taxa, such as *Avena barbata*, *A. fatua*, *Bromus hordeaceus*, *B. rubens*, *Schismus barbatus*, and *Erodium cicutarium*, are important in these stands, there is a noteworthy diversity of native taxa. Common native elements include *Coreopsis bigelovii*, *Lasthenia californica*, *Eschscholzia californica*, *Lupinus bicolor*, *Dichelostemma pulchellum*, *Tropidocarpum gracile*, *Chaenactis xantiana*, *Phacelia tanacetifolia*, *Salvia columbariae*, and *S. schizantha*. Among the rarer components are *Calochortus kennedyi*, *E. fasciculatum*, *Pinus monophylla*, *V. var. subscaposum*, and *E. wrightii var. subscaposum*, and *E. fasciculatum*. The herbaceous understory is similar to that of the adjacent black oak series.

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Grasslands dominated by nodding needle grass, *Stipa cernua*, are small and uncommon within the range. The most intact examples are found at the western edge of the study area, in Osito Canyon. Here they are developed on deposits of locally weathered heavy soil within a broader matrix of better-drained sandstone-derived soils which support various chaparral and sage scrub series. Although exotic annual grasses have invaded these areas, as elsewhere, *Stipa cernua* is still dominant. Common herbaceous elements associated with these grasslands include *Plantago erecta*, *Lotus w提醒anellius*, *Cryptantha microstachys*, *Hemizonia fasciculata*, *Microseris lindleyi*, *Dichelostemma pulchellum*, and *Calystegia peirsonii*.

The common reed series, characterized by nearly pure stands of *Phragmites australis*, is restricted to low-gradient portions of the Apple Canyon drainage, just east of Interstate 15. This area is periodically inundated when Pyramid Lake is filled to capacity, perhaps accounting for the abundance of this coarse grass at the site. The giant reed series, characterized by nearly pure stands of *Arundo donax*, is limited to the floodplain of the Santa Clara River at the eastern edge of the study area.

**FLORA**

*Numerical summary and phytogeography*

The inventory of the Liebre Mountains flora presented here is limited to “naturally” occurring taxa, that is, indigenous natives and those nonnatives thought to be growing and reproducing without direct, conscious human intervention (i.e., outside of cultivation). In this context, I have excluded long-persistent plantings of trees and shrubs, unless there was a clear indication that there has been subsequent adventive establishment. On the other hand, waifs of exotic annuals and short-lived perennial herbs were included, although I recognize that some will no doubt be transitory participants in the dynamic floristic diversity of the region.

Based on fieldwork conducted to date, as well as examination of specimens housed at RSA-POM and elsewhere, 1010 vascular plant taxa (species, subspecies, varieties, and natural hybrids) are documented from the Liebre Mountains region. These represent 104 families and 400 genera (Table 5). The largest families include *Asteraceae* (68 genera/150 species), *Poaceae* (40/96), *Fabaceae* (17/71), *Scrophulariaceae* (12/49), *Polygonaceae* (9/47), *Brassicaceae* (17/41), *Polemoniaceae* (9/39), *Onagraceae* (6/31), and *Boraginaceae* (6/26). Other important families include *Apiaceae*, *Caryophyllaceae*, *Chenopodiaceae*, *Convolvulaceae*, *Cyperaceae*, *Fagaceae*, *Hydrophyllaceae*, *Lamiaceae*, *Ranunculaceae*, *Rhamnaceae*, *Rosaceae*, and *Solanaceae*. The nine largest families account for nearly 55% of the total flora of the range. The largest genera include *Eriogonum* (26 taxa), *Lupinus* (23), *Brassica* (17), *Camissonia* (14), *Phacelia* (14), *Quercus* (14), *Gilia* (13), *Lotus* (13), *Chenopodium* (12), *Cryptantha* (12), and *Mimulus* (10).

Additional well-represented genera include *Allium*, *Astragalus*, *Atriplex*, *Calochortus*, *Calystegia*, *Carex*, *Ceanothus*, *Clarkia*, *Claytonia*, *Collinsia*, *Elymus*, *Galium*, *Gnaphalium*, *Hordeum*, *Juncus*, *Linanthus*, *Lomatium*, *Salvia*, *Scirpus*, *Trifolium*, and *Vulpia*.

A complete listing of the taxa is presented below in the annotated catalogue. Several taxa were excluded from the present enumeration of the flora, although voucher specimens at RSA suggest they were collected within the boundaries of the Liebre Mountains study area. In all instances, I questioned the veracity of the records because the locality information on the specimen is vague and the characteristic habitat of the taxa involved is different from that inferred by the purported collection station. Nevertheless, I have included references to these excluded taxa as an addendum to the annotated catalogue so their status may be re-examined should the taxa be encountered during future floristic work in the range.

The flora of the Liebre Mountains region is comparable to other areas of southern California in exhibiting a ratio of native to nonnative taxa of approximately 4:1 (Table 6). Although the percentage of natives is the highest of those areas compared, this may reflect a certain sampling bias, as field efforts of the present study were largely focused on relatively less-disturbed public lands. It is likely that further floristic documentation of habitats in the wildland-urban interface within the Liebre Mountains region will increase the number of adventive and naturalized exotic taxa.

A comparison of percentage distribution of taxa among life-forms within the Liebre Mountains and other selected regions is presented in Table 7. A typical floristic feature of areas with Mediterranean-type climate is the preponderance of annual and herbaceous perennial taxa (Thorne 1967; Shmida 1981). The Liebre Mountains region conforms to this general pattern, although the representation of native annuals is slight-
ly higher than documented in either the Santa Ana or Santa Monica mountains. In part this may reflect greater the climatic diversity of the Liebre Mountains region which includes considerably more xeric conditions along the southwestern margin of the Mojave Desert.

The Similarity Index (SI) of Soerensen \(SI = \frac{2C}{A + B} \times 100\%\); where \(A\) = number of taxa in one area, \(B\) = number of taxa in a second area, and \(C\) = number of taxa common to both areas, provides a simple method of comparing relative floristic similarity of two areas (Balgooy 1971). Two southern California regions suitable for comparison with the Liebre Mountains are the Santa Ana and Santa Monica mountains. These ranges are of generally similar size and topographic diversity to the Liebre Mountains region, and have relatively well-documented floras (Lathrop and Thorne 1978, 1985; Boyd et al. 1995, Boyd, Ross, and Roberts 1995, Raven et al. 1986; Wishner 1997; Ross 1996). The total floras of the Liebre and Santa Ana mountains exhibit a SI of 56.5%. A comparison of both the native and nonnative elements of these areas exhibit similar SI values, 56.6% and 56.1% respectively. Comparison of the Liebre Mountains with the Santa Monica Mountains gives a SI of 53.3% for the total flora, 53.7% for the native component, and 51.8% for nonnative elements. As a point of further comparison, SI calculated for the Santa Ana vs. Santa Monica mountains is higher than for either range compared with the Liebre Mountains (SI = 64.4% for total flora; 67.9% for native flora).

As with life-forms, climatic diversity likely plays an important role in shaping the similarities and differences observed among the floras of these three areas. The Santa Ana and Santa Monica ranges are similar in having climatically disparate coastal and interior cismontane slopes (Lathrop and Thorne 1978; Raven et al. 1986). Although the drier interior slopes support a number of “desert” taxa, both ranges lack the strong Mojave Desert influence present in the Liebre Mountains region. Conversely, the Liebre Mountains lack the lowland, coastal influences found in the Santa Ana, and especially, Santa Monica mountains.

A major impetus for selecting the Liebre Mountains region for study was its proximity to the borders of several major physiographic and phytogeographic units of southern California. The area is situated at the nexus of the Transverse Ranges, Coast Ranges, Sierra Nevada, Mojave Desert, and coastal plains (Hickman 1993; McLaughlin 1992). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core of a physiographic region. This pattern seems to hold for the Liebre Mountains region when compared with the Santa Ana or Santa Monica ranges, especially with respect to the native elements (Table 6).

A logical extension of the floristic analysis discussed above would be comparison of the Liebre Mountains with the somewhat larger, but closely juxtaposed San Gabriel, Pine Mountain, and Tehachapi ranges. Unfortunately, such analysis must await formal enumeration of the flora of those regions.

**Sensitive taxa**

Another goal of this study was to provide better documentation of plant taxa of conservation concern within the Liebre Mountains region. Much of the upland portions of the range are public lands managed by the Angeles National Forest. A baseline account of the resources being managed is required for establishing effective, long-term management plans. Large, ecologically intact units such as the Liebre Mountain uplands represent critical refugia for long-term conservation of southern California’s low- and mid-elevation native flora. Areas which exhibit exceptional biological diversity are of even greater importance in this context.

Plants of conservation concern are those which have been designated “special plants” by California Department of Fish and Game, Natural Diversity Database (CDFG-NDDB 1998). The term “special plants”
Table 7. Comparison of life-form spectra for the Liebre Mountains region and other selected regions of southern California.

<table>
<thead>
<tr>
<th>Floristic unit</th>
<th>No. of taxa</th>
<th>Percentage distribution of taxa among life-forms*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tr</td>
</tr>
<tr>
<td>Liebre Mountains region</td>
<td>847</td>
<td>3</td>
</tr>
<tr>
<td>Total taxa</td>
<td>1010</td>
<td>4</td>
</tr>
<tr>
<td>San Mateo Cyn Wilderness</td>
<td>500</td>
<td>3</td>
</tr>
<tr>
<td>Total taxa</td>
<td>626</td>
<td>3</td>
</tr>
<tr>
<td>Santa Rosa Plateau</td>
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<td>3</td>
</tr>
<tr>
<td>Total taxa</td>
<td>580</td>
<td>3</td>
</tr>
<tr>
<td>Santa Ana Mtns s.l.</td>
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<td>2</td>
</tr>
<tr>
<td>Total taxa</td>
<td>1023</td>
<td>3</td>
</tr>
<tr>
<td>Santa Monica Mtns</td>
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<td>2</td>
</tr>
<tr>
<td>Total taxa</td>
<td>891</td>
<td>2</td>
</tr>
<tr>
<td>Santa Catalina Is.</td>
<td>391</td>
<td>2</td>
</tr>
<tr>
<td>Total taxa</td>
<td>557</td>
<td>1</td>
</tr>
<tr>
<td>California mediterranean areas (Shmida 1981)</td>
<td>307</td>
<td>4</td>
</tr>
<tr>
<td>Raunkiaer's Normal Spectrum (Raunkiaer 1934)</td>
<td>400</td>
<td>6</td>
</tr>
</tbody>
</table>

* Tr = trees (mesophanerophytes, 8–25 m tall); Shl = large shrubs (microphanerophytes, 2–8 m tall); Shs = small shrubs (nanophanerophytes, 0.5–2 m tall); Li = lianas (climbing phanerophytes with persistent stems); SfP = suffruticose perennials (chamaephytes, vegetative buds not over 0.5 m above the ground); PH = perennial herbs (hemicryptophytes, vegetative buds at or just below soil surface); G = geophytes (herbaceous, vegetative buds well below soil surface); An = annuals (therophytes, including facultative biennials); Ep = epiphytes (nonparasitic); Pa = strict parasites (depending on other plants for much or all of their sustenance); Su = succulents (including stem succulents, leaf succulents, and rosette-leaved shrubs); Aq = aquatic plants (obligate hydrophytes, submersed or floating).

is a broad reference to all plant taxa inventoried by CDFG-NDDB, without regard to their legal or protection status (CDFG-NDDB 1998). Other common terms used to refer to such plants (e.g., rare, threatened, endangered, or sensitive) have taken on specific legal connotations in the highly politicized and litigious arena of species conservation. In the subsequent discussion, my use of the term “sensitive plants” should be interpreted as equivalent to CDFG-NDDB’s “special plants” as opposed to other narrower definitions.

A total of 32 sensitive plant taxa have been documented within the Liebre Mountains region (Table 8). Four are formally listed under the federal Endangered Species Act (ESA)—Berberis nevinii (Endangered), Dodecahema leptoceras (Endangered), Navarretia fossa/is (Threatened), and Orcuttia californica (Endangered). The Berberis, Dodecahema, and Orcuttia are also listed as Endangered under the California ESA. Castilleja gleasonii is listed by the State as Rare. The majority of sensitive plants documented from the range are taxa considered by the California Native Plant Society (CNPS) as rare, threatened, or endangered (Skinner and Pavlik 1994).

Several of the sensitive plant taxa of the range are phytogeographically noteworthy. Berberis nevinii, Orcuttia californica, Dodecahema leptoceras, and Hapagonella palmeri reach the northern limits of their range within the Liebre Mountains region. Navarretia fossalis may also share this distinction, depending upon interpretation of an anomalous collection from San Luis Obispo County (Boyd and Sanders, in press).

ANNOTATED CATALOGUE OF THE VASCULAR FLORA

The following list includes all vascular plant taxa documented during fieldwork in the Liebre Mountains region, and through herbarium specimens deposited at RSA-POM and elsewhere. A representative voucher specimen is cited for each taxon listed, including collector name(s), number, and collection date. Unless otherwise cited, voucher specimens are deposited at RSA-POM. Herbarium acronyms follow Index Herbariorum, 8th ed. (Holmgren, et al. 1990).

An alphabetical arrangement has been followed for families within subdivisions, classes, or subclasses, as well as for genera within families, and species within genera. Nomenclature used in this list largely follows Hickman (1993). Family nomenclature is that of Thorne.
Table 8. Sensitive plant taxa documented within the Liebre Mountains region.

<table>
<thead>
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<th>Taxon</th>
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<tr>
<td>Acanthominth a obovata ssp. cordata</td>
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<td>Allium howellii var. clokeyi</td>
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<td>Arenaria macradenia var. kushei</td>
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<td>Thermopsis californica var. argentina</td>
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FE = federal listed endangered; Fr = federal listed threatened; Fsoc = federal species of concern; SE = California State listed endangered; SR = CA State listed rare; CNPS = California Native Plant Society listed (see Skinner & Pavlik [1994] for discussion of list ranking).

(1992) for the flowering plants, and Crabbe, et al. (1975) for ferns.

Nonnative taxa are indicated by an asterisk (*) before the name. Plants considered sensitive by the Angeles National Forest, California Native Plant Society, California Department of Fish and Game, and/or United States Fish and Wildlife Service are indicated by a dagger.

LYCOPODIACEAE

SELAGINELLACEAE


EQUISETACEAE


FILICAEE

ADIANTEACEAE


ASPLENIIACEAE


AZOLLACEAE

Azolla filiculoides Lam Aquatic perennial herb. Local on surface of standing water and spring outflow, as at Knapp Ranch. Boyd 8693, 25 Apr 1996.

DENNstaedtiaceae


MARSILEACEAE

Marsilea vestita Hook. & Grev. Aquatic perennial herb. Scarce, documented from Bouquet Reservoir, but to be expected along margins of other water bodies, such as Lake Hughes, Elizabeth Lake, and other sag ponds along the San Andreas Fault Rift. Raven 16748, 24 Sep 1961.

POLYPODIACEAE


CONIFERAE

CUPESSUS ARIZONICA

EPHEDRA

JUNIPERUS CALIFORNICA

EPHEDRA

POL YPODIUM CALIFORNICUM

*CALOCEDRUS DECURRENS (Torr.) Florin Tree. Introduced at scattered sites throughout the range in Forest Service plantations and occasionally becoming adventive. Apparently no natural stands are present in the range. Ross & Boyd 8319, 21 Sep 1994.

*CUPRESSUS ARIZONICA Greene spp. ARIZONICA Tree. Introduced at scattered sites throughout the range, especially in Forest Service plantations and occasionally becoming adventive. Ross & Boyd 8321, 21 Sep 1994.

CUPRESSUS ARIZONICA Greene spp. NEVADENSIS (Abrams) E. Murray Tree. Local in scrub along ridgeline of Warmsprings Mountain, west of the summit. Boyd, Brummitt, & Moore 10232, 26 May 1998. This population is composed of fewer than 50 nonreproductive juvenile plants, scattered about the vicinity of fire-killed parental trees. It is unclear whether this represents a natural population or adventive individuals derived from originally cultivated material. Although the plants observed were adjacent to a Forest Service road, given the overall isolated nature of the site, I have treated this as a presumably natural stand. To verify this interpretation, additional searches should be made for the taxon in the vicinity of Warmsprings and Red Rock Mountains. If the population is natural, it represents a significant extension of the known range southward from the southern Sierra Nevada.

JUNIPERUS CALIFORNICA Carriére Large shrub. Widespread and locally common in more xeric areas, as at the northwest end of the range, and in the vicinity of Agua Dulce and Acton. Ross & Boyd 2808, 6 Jun 1990.

EPHEDRACEAE


PINACEAE

PINUS COULTERI D. Don Tree. A few occurrences along the north face of Liebre and Sawmill mountains appear to be natural populations. The species has been introduced at scattered sites throughout the range, however, especially in Forest Service plantations. Clark 1205, 1 Oct 1928.

PINUS MONOPHYLLA Torr. & Frém. Tree. Locally common in a limited area at the northwest end of the range, generally restricted to ridges of sedimentary substrate. Boyd, Mistretta, & Dolan 8586, 18 Apr 1996. A few individuals are found on the northeastern flank of Sierra Pelona and are noteworthy in possessing both single and two-needle leaves. Boyd, Raz, & Kinney 10089, 17 May 1998.

PINUS PONDEROSA Douglas ex Lawson & C. Lawson Tree. A few occurrences along the north face of Liebre and Sawmill mountains appear to be natural populations. The species has been introduced at scattered sites throughout the range, however, especially in Forest Service plantations. Ross & Boyd 7809B.

PINUS SARJANNA Douglas Tree. Locally common from the edge of the Antelope Valley southward across Portal and Ritter ridges to the northern flanks of Sawmill and Liebre Mountains, with isolated individuals observed as far south as Red Rock Mountain. Wolf 8310, 27 Jan 1937.

PSEUDOTSUGA MACROCARPA (Vasey) Mayr Tree. Locally common in steep, shaded, mesic draws, especially along the northern flank of Liebre and Sawmill mountains and the Cold Canyon drainage. Boyd et al. 10001, 8 Jul 1997.

ANGIOSPERMAE-DICOTYLEDONES

ACERACEAE

ACER MACrophyllum Pursh Tree. Local in mesic, shaded canyons at scattered sites throughout the range. Boyd & Raz 9800, 20 May 1997.

ADOXACEAE


AZIOCARDIACEAE

SESUVIUM Verrucosum Raf. Perennial herb. Scarce. Documented from the margin of Elizabeth Lake, but to be expected in similar situations, as at Bouquet Reservoir, Lake Hughes, Quail Lake, and sag ponds along the San Andreas Fault Rift. Boyd & Raz 9098, 29 Oct 1996.

AMARANTHACEAE

*AMARANTHUS ALBUS L. Annual. Local at widely scattered, seasonally moist disturbed sites. Boyd et al. 8906, 11 Jul 1996.


ANACARDIACEAE

MALOSMA LAURINA (Nutt) Abrams Large shrub. Very scarce, known from a single historic collection in Elizabeth Lake Canyon south of Warm Springs. Gifford 696, 8 May 1935.

RHUS INTEGRIFOLIA (Nutt) Brewer & S. Watson & RHUS OVATA S. Watson Large shrub. Infrequent at the southwestern edge of the range, as in Charlie and San Francisco canyons. Boyd & Wall 8536, 4 Apr 1996.

RHUS OVATA S. Watson Large shrub. Scarce in chaparral across the range, and apparently more common in the south and west. Ross 8365, 7 Apr 1995.


RHUS TRIBOBATA Nutt. ex Torr. & A. Gray var. QUINITA (Greene) Jeps. Small shrub, apparently the most common form of the species, locally common in oak woodland, mesic chaparral, and riparian woodland throughout the range. Ross & Banks 7534, 13 Apr 1994.

**ASTERACEAE**


*FOeniculum vulgare* Mill. Suffruticoso perennial. Uncommon, documented from a disturbed riparian area in lower Agua Dulce Canyon, but to be expected in ruderal situations throughout the range. *Raz & Boyd* 9028, 14 Oct 1996.


*Sanicula Cressacalis* DC. Geophyte. Widespread and often common in understory of chaparral on mesic slopes. *Boyd, Raz, & Ross* 9468, 1 Apr 1997.


**APICACEAE**


**ASTERACEAE**


*Ambrosia Pilosachya* DC. var. californica (Ryd.) S. F. Blake Perennial herb. Common in understory of riparian and oak wood-
land in drainages throughout the range. *Boyd & Raz 8926, 24 Sep 1996.  

*Anisocoma filagineus* A. Gray Annual. Local on open, low competition sites, especially heavy soils, low to mid-elevation areas in the western half of the range. *Boyd, Mistrutta, & Dolan 8548, 18 Apr 1996.  


*Artemisia tridentata* Nutt. ssp. tridentata Small shrub. Locally common on the northern flank of Sierra Pelona, and at scattered sites westward on the higher ridges. *Boyd & Raz 9011, 8 Oct 1996.  

*Aster frondosus* Torr. & A. Gray Annual. Known from a single collection at Lake Hughes, but to be expected about other bodies of water along the San Andreas Rift Zone. *Charlton 4115, 7 Oct 1989.  

*Aster greatae* Parish Perennial herb. Local about springs in understory of oak woodland, near Cienaga Campground in Fish Canyon; also documented by an early collection from Acton. *Raz & Boyd 063, 23 Oct 1996.  

*Aster supilatus* Michx. var. ligulatus Shinn. Annual. Known from a single collection at Quail Lake, but to be expected about other bodies of water along the San Andreas Rift Zone. *Boyd & Raz 9085, 14 Oct 1996.  


*Brickellia nevini* A. Gray Small shrub. Local on steep, xeric slopes and cliffs, western and southwestern parts of the range. *Boyd & Raz 8992, 8 Oct 1996.  

*Centaura melitensis* L. Annual. Widespread and locally common in grassland and openings in scrub and oak woodland. Especially prevalent in degraded and over-grazed habitats. *Porser, Columbus, & dos Santos 10926, 5 Jun 1996.  


*Chaenactis santolinoides* Greene Perennial herb. Scattered, but locally common openings in oak woodland and chaparral on the higher ridges, generally in loose soil or scree. *Boyd & Raz 9826, 20 May 1997.  


*Chaenactis xantiana* A. Gray Annual. Widespread and locally common across the northern edge of the range from the Antelope Valley to the summits of the higher ridges, especially in grassland and sandy openings on granite substrate. *Ross 8778A, 24 Apr 1995.  


*Cnicus benedictus* L. Annual. Infrequent in disturbed and ruderal sites scattered throughout the range. *Boyd & Raz 8990, 24 Sep 1996.  

*Coryza canadenis* (L.) Cronquist Annual (sometimes treated as introduced). Widespread in most habitats, but generally not com-


**CORYPHOPHYLLUM FILAGINIFOLIA** (Hook. & Arn.) Nutt. var. PERSICONE M. L. Canty Saffronicose perennial. Widespread and common, xeric openings in scrub, open oak woodland, and grassland, and various areas recovering from past disturbance. Munz 7785, 7 Oct 1923 (Holotype).


**ECLIPTA PROSTRATA** (L.) L. Annual. Locally common on mud along the shores of Elizabeth Lake and to be expected in other bodies of water along the San Andreas Fault Rift. Boyd & Raz 9067, 29 Oct 1996.


***ENCelia FARINOSA** Torr. & A. Gray var. FARINOSA Small shrub. Local on fill slopes along Lake Hughes Road east of Castaic Lake, and other scattered areas, apparently originally introduced as a slope stabilizer. Boyd & Ross 9190A, 21 Mar 1997.

**ERICAMERIA COOPERI** (A. Gray) H. M. Hall spp. COOPERI Small shrub. Local in xeric scrub on the desert margin westward through the Antelope Valley and southwest into the head of Soledad and Mint canyons. Everett & Balls 23803, 22 May 1959.

**ERICAMERIA COOPERI** (A. Gray) H. M. Hall spp. COOPERI × ERICAMERIA LINEARIFOLIA (DC.) Urbatsch & Wussow Small shrub. Locally common at the northern base of Portal Ridge at the mouth of Myrick Canyon. All plants here were uniform in overall morphology, and neither putative parent species was readily apparent in the immediate vicinity. Boyd & Raz 9365, 26 Mar 1997.


**ERICAMERIA PINFOLIA** (A. Gray) H. M. Hall Small shrub. Infrequent in scrub, scattered sites in the southern and central portions of the range, locally common on the lower slopes in the vicinity of Lake Hughes. Gifford 419, 24 Jun 1935.

**ERIGERON FOLIOSUS** Nutt. var. STENOPELLUS (Nutt.) A. Gray Perennial herb. Widespread and common, openings within scrub and oak woodland. Ross, Boyd, & Burns 8125, 7 Jul 1994.


**ERIOPHYLLUM CONFERTIFLORUM** (DC.) A. Gray var. TRIFIDUM (Nutt.) A. Gray Saffronicose perennial. Widespread and common in xeric scrub, openings in oak woodland, and margins of grassland. Ross & Boyd 7705, 10 May 1994.


**EUHANIA OCCIDENTALIS** Nutt. Perennial herb. Local along drainages and about springs throughout the range. Raz & Boyd 005, 23 Oct 1996.

**FILAGO CALIFORNICA** Nutt. Annual. Widespread and common, open situations in scrub, grassland, and woodland habitats, especially common on recently burned slopes. Boyd & Raz 9736, 6 May 1997.


**GNAPHALIUM BOCOLOR** Buleti Saffronicose perennial. Scarce, collected once in Soledad Canyon. Mullins s.n., 1 Apr 1931.


**GNAPHALIUM MICROCEPHALUM** Nutt. Saffronicose perennial. Uncommon and local on open, rocky slopes, as in lower Fish and Ruby canyons. Boyd et al. 8915, 11 Jul 1996.


**GRINDELIA CAMPORUM** Greene var. BRACTEOSA (J. T. Howell) M. A. Lane Perennial herb. Uncommon, collected once along the Old Ridge Route. Ramsey & Ramsey 950, 27 Jun 1937.

**GRINDELIA CAMPORUM** Greene var. CAMPORUM Perennial herb. Locally common in over-grazed pastures and intermittently cultivated grain fields in Leona Valley. Lane 3093, 6 Sep 1966.


**GUTIERREZIA SAROTHRAE** (Pursh) Britton & Rusby Saffronicose perennial. Widespread, occasional in openings in scrub, more common locally in old disturbed areas. Boyd & Raz 8958, 24 Sep 1996.

**HARZARIA SQUAROSA** (Hook. & Arn.) Greene var. GRINDELIOIDES (DC.) W. D. Clark Small shrub. Infrequent, openings in scrub and oak woodland, mostly in the western half of the range. Wolf 4353, 19 Oct 1932.

HELIANTHUS ANNUUS L. ssp. LENTICULARIS (Douglas) Cockerell Annual. Widespread and locally common along drainages, and especially in moist disturbed or heavily grazed areas. Porter, Columbus, & dos Santos 10914, 5 Jun 1996.


HEMIZONIA FASCICULATA (DC.) Tort. & A. Gray Annual, Widespread, but generally uncommon, except locally in areas of heavy, seasonally moist soil, as in upper Osito Canyon and in the Cruzan Mountains, common on benches along drainages, and especially in moist, disturbed areas.

HEMIZONIA HELBESTI A. Gray Annual. Locally common in xeric scrub, and on alluvial benches, mostly in the southern half of the range. Boyd & Raz 9058, 14 Oct 1996.

HEMIZONIA LEMONONI A. Gray var. PEABODYI (J. T. Howell) Ferris Annual. Locally common, grassland, openings in woodland and xeric scrub, and on alluvial benches, mostly in the northern half of the range. Peirson 3550, 9 Jun 1923 (Isotype).

HEMIZONIA LEMONONI A. Gray var. RAMULOSISSIMA (A. Nelson) Ferris Annual. Openings in xeric scrub and on alluvial benches, southeastern end of the range, as near Acton and Mint Canyon. Wolf 4078, 15 Sep 1932.


HETEROTHeca SESSILIFLORA A. Gray Annual. Uncommon along drainages, and especially in moist disturbed or heavily grazed areas. Porter, Columbus, & dos Santos 10914, 5 Jun 1996.


HETEROTHeca SESSILIFLORA (Nutt.) Shimmert ssp. ENCODIDES (Benth.) Semple Perennial herb. Scarce, documented by early collections from lower elevations in the Newhall-Saugus area. Wolf 4081, 15 Sep 1932.

HETEROTHeca SESSILIFLORA (Nutt.) Shimmert ssp. FASTIGIATA (Greene) Semple Perennial herb. Locally common at scattered sites in the northeastern part of the range, generally on well drained soils in grassland and open, xeric scrub. Ross & Boyd 8287, 21 Sep 1994.


HYMENOLECA SALSOE A. Gray & A. Gray Small shrub. Occasional in open, xeric scrub, areas of desert transition at the northeastern corner of the range. Cantwell s.n., May 1930.


HOLIZONIA LEMONONI A. Gray Annual. Widespread and locally common, grassland, openings in scrub and woodland, and especially on recent burns. Wheeler 9349, 8 May 1967.

HOLIZONIA LEMONONI A. Gray var. TENUIFOLIA (Nutt.) A. Gray Perennial herb. Widespread and locally common, relatively open, steep rocky slopes, less frequent on open alluvial benches. Charlton 5509, 5 Jul 1991.

HOLIZONIA LEMONONI A. Gray Annual. Widespread, generally in somewhat disturbed situations, especially on compacted soil, as along dirt roads or foot trails. Ross & Boyd 7724, 10 May 1994.

HOLIZONIA LEMONONI A. Gray var. CALIFORNICUS Annual. Infrequent, but locally common on heavy soils, openings in scrub. Boyd & Wall 8775, 16 May 1996.

HOLIZONIA LEMONONI A. Gray Annual. Widespread and locally common, grassland, openings in scrub and woodland, and especially on recent burns. Wheeler 9349, 8 May 1967.


HOLIZONIA LEMONONI A. Gray var. CALIFORNICUS Annual. Locally common, openings in xeric scrub and on alluvial benches, mostly in the southern half of the range. Boyd & Raz 9058, 14 Oct 1996.


Rafipappus leptoclados A. Gray Annual. Locally common in openings of scrub and woodland along the crest of the higher ridges, and scattered elsewhere, as in upper Osito Canyon and Portal Ridge. Boyd & Raz 9645, 1 May 1997.

Senecio breviflorus Burt Dasy Perennial herb. Widespread, but uncommon in understorey of chaparral. Peterson 3088, 3 June 1922.


Senecio flaccidus Less. var. monodonis (Greene) B. L. Turner & T. M. Barkley Small shrub. Widespread, infrequent in open scrub and woodland, locally common in sandy soil along drainages, northeastern end of the range. Boyd & Raz 9061B, 14 October 1996.

*Senecio vulgaris I. M. Johnst. Annual. Widespread, occasional in somewhat disturbed situations within grassland, scrub, and woodland, more frequent in recently burned areas. Boyd & Raz 91428, 4 March 1997.


Sonchus oleraceus L. Annual. Widespread, most frequently in most disturbed situations, but occasionally elsewhere in relatively undisturbed habitats. Porter, Columbus, & dos Santos 10927, 5 June 1996.

Stephanomeria cichoracea A. Gray Perennial herb. Local on open, steep rocky slopes at scattered sites throughout the range, as in Spunky, Ruby, and Elizabeth Lake canyons, and about Knapp Ranch. Ross & Boyd 8266, 20 September 1994.

Stephanomeria exigua Nutt.ssp. coriaria (Greene) Gottlieb Annual. Widespread, occasional to locally common in grassland and openings in scrub and woodland. Boyd & Raz 8967, 24 September 1999.

Stephanomeria pauciflora (Nutt.) A. Nelson Sulfurcrocisene perennial. Widespread, but generally not common, mostly in xeric scrub. Hall & Hall 8331, 4 July 1968.

Stephanomeria virgata Beth. ssp. pleurocarpa (Greene) Gottlieb Annual. Widespread, but generally uncommon, in grassland and openings in scrub and woodland. Raz & Boyd 019, 23 October 1996.


Syntrichopappus lemnsonii A. Gray Annual. Infrequent in open habitats, areas of desert transition, eastern end of the range. Boyd & Mistretta 8738, 1 May 1996.


Tetradyne comosa A. Gray Small shrub. Uncommon in open scrub along the southern edge of the range, generally seen in small colonies. Wolfe 4077, 15 September 1932.

Xanthium strumarium L. Annual. Widespread and locally common along streams in the larger drainages, and occasionally in seasonally wet disturbed areas. Raz & Boyd 001, 23 October 1996.

Xylographa tortifolia (Torr. & A. Gray) Greene Sulfurcrocisene perennial. Uncommon, documented from rocky hillsides in Mint Canyon, presumably from the area of desert transition at the upper end. Templeton 1456, 19 May 1931.

Berberidaceae


Betulaceae

Alnus rhombifolia Nutt. Tree. Widespread and locally common in larger drainages with reliable water supply, especially in Castaic Creek and its tributaries, and along the northern flank of Liebre and Sawmill mountains. Raz & Boyd 030, 23 October 1996.

Boraginaceae


Amsinckia tessellata A. Gray var. tessellata Annual. Widespread and common, especially in grassland and open areas in scrub and woodland in the northern half of the range. Boyd & Raz 9322, 26 March 1997.


Cryptantha clevelandii Greene Annual. Occasional in open habitats, scattered sites in the western half of the range. Boyd & Raz 9719, 6 May 1997.

Cryptantha decipiens (M. E. Jones) A. Heller Annual. Occasional in open habitats, scattered sites in the western half of the range. Boyd & Raz 9594, 30 April 1997.


Cryptantha micrantha (Torr.) I. M. Johnst. Annual. Uncommon,
open alluvial benches of Soledad Canyon Wash near Acton. Elmer 3682, Jun 1902.

Cryptantha microstachys (Greene ex A. Gray) Greene Annual. Widespread and locally common in mesic situations in open understory of chaparral and oak woodland. Hoffmann s.n., 19 May 1930.


Cryptantha simulans Greene Annual. Uncommon, documented from xeric habitats at both the eastern and western ends of the range. Ross, Boyd, & Arneth 4855, 29 Apr 1991.

Harpagonella palmeri A. Gray Annual. Uncommon and very local, open clay soil in palm Canyon near Cruzan Mesa, and historically near Saugus. This is the northern limit for the species. Boyd & Raz 9134, 4 Mar 1997.


Pectocarya setosa A. Gray Annual. Widespread and locally common in grassland, sandy openings in scrub and woodland, and open alluvial benches. Petison 1016, 13 May 1917.


Phacophrythis arizonicus (A. Gray) Greene ex A. Gray & Phacophrythis nothofulvus (A. Gray) A. Gray Annual. Plants of intermediate morphology have been documented from grassland and open areas in scrub along the crest of Sierra Pelona. Boyd & Raz 9563B, 1 May 1997.


Phacophrythis nothofulvus (A. Gray) A. Gray Annual. Occasional in open habitats, mostly along the southern and western edges of the range. Ross & Banks 7500, 12 Apr 1994.


Lepidium fremontii S. Watson Small shrub. Uncommon, documented from Mint Canyon, probably at the upper end in an area of desert transition. Templeton 1437, 19 May 1930.


Lepidium virginicum L. var. pubescens (Greene) C. L. Hitchcock Annual. Uncommon, documented along the southern edge of the range. Craig 483, 19 Jun 1927.

Rorippa curvisiliqua (Hook.) Bessey ex Britton Annual or biennial herb. Scarce, marshy ground along Queen Lake. Boyd & Raz 9088.


*Sisymbrium altissimum* L. Annual. Widespread and common in grassland and openings in scrub and woodland, especially on recent burns or disturbed or grazed areas. Boyd & Raz 9872, 28 May 1997.


*Sisymbrium orientale* L. Annual. Widespread and common in grassland and openings in scrub and woodland, especially on recent burns or disturbed or grazed areas. Boyd, Raz, & Ross 9465, 1 Apr 1997.


Cactaceae


Opuntia basilarsis Engelm. & J. M. Bigelow var. basilarsis Succulent shrub. Widespread, but generally infrequent in open xeric scrub and xeric open woodland. More common along the crest of Sierra Pelona and at the extreme northwestern corner of the range. Ross & Porter 8510, 4 May 1995.


Opuntia littoralis (Engelm.) Cockrell Succulent shrub. Scarce, known from an early collection near Newhall. Stark s.n., 24 Jan 1933.


Callitrichaceae


Camaranaceae


Nemacladus ramosissima Nutt. Annual. Uncommon, documented from several widely scattered sites along the southern edge of the range. Boyd & Raz 9709, 6 May 1997.


Cannabaceae

*Cannabis sativa* L. Annual. Cultivated in clandestine gardens within remote canyon areas of the range; occasionally encountered as a waif (generally seedlings) in more accessible areas, such as Soledad Canyon. Mistretta & Hammitt s.n., 20 Jun 1991.

Capparaceae


Caprifoliaceae


Symphoricarpos albus (L.) S. F. Blake var. laevigatus (Fernald) S. F. Blake Small shrub. Locally common, understory of oak woodland and shaded rocky outcrops in chapparal, upper slopes.

**SYMPHORICARPOS MOLLIS** Nutt. in Tort. & A. Gray Small shrub. Scarcely documented by an early collection from near Acton. *Hasse s.n.*, Aug 1893.

**CARYOPHYLLACEAE**


**CHENOPODIACEAE**

*ATRIPLEX CANESCENS* (Pursh) Nutt.ssp. *CANESCENS* Small shrub. Widespread and locally common in xeric scrub, especially areas of sedimentary substrate along the southern and western edges of the range, and in desert transition about the northeast corner. Also seeded on road cuts, pipeline scars and other disturbed sites. *Boyd & Raz* 9040, 14 Oct 1996.


*ATRIPLEX SEMINACATA* B. Br. Suffruticose perennial. Occasional at scattered sites along the southern edge of the range, primarily in disturbed situations on sedimentary substrates. *Boyd et al.* 8907, 11 Jul 1996.


*SALSOLO TRAGUS* L. Annual. Widespread, generally in areas of recent disturbance where it may be abundant. *Boyd & Raz* 8972, 24 Sep 1996.

**CISTACEAE**


*CISTUS LADANIFER* L. Small shrub. Established in scrub along the Old Ridge Route near Templin Highway and the historic site of Tumble Jan. also along the Leona Divide Road above Dowd Canyon at the western end of Sierra Pelona. *Ross* 8357, 7 Apr 1995.


**CLUSIACEAE**


**CONVOLVULACEAE**


**CORNACEAE**


**CRASSULACEAE**


**CUCURBITACEAE**


**MARAH FABACEUS** (Naudin) Greene Geophyte. Locally common in scrub and open woodland across the western and northern edges of the range. *Raz, Boyd, & Ross* 9450, 1 Apr 1997.


**MARAH MACROCARPUS** (Greene) Greene Geophyte. Widespread and locally common in scrub and woodland, especially in the southern half of the range. *Hook s.n.*, 13 May 1939.

**DATISCAEACEAE**


**ELATIACEAE**

ERICACEAE

ARCTOSTAPHYLOS GLANDULOSA Eastw. ssp. GLAUCOMOLLIS P. V. Wells
Large shrub. Widespread and locally common in chaparral, especially on mesic exposures; occasional in understory of woodland on Liebre and Sawmill mountains. Ross & Boyd 8760, 1 May 1996.


ARCTOSTAPHYLOS PARRIANA Lemmon Large shrub. Scarce, documented by an early collection at Sprague’s. Dudley & Lamb 4345, 5 Jun 1896.

EUPHORBIAEAE


FABACEAE


ASTRAGALUS DIDYMOCARPUS Hook. & Ait. var. DIDYMOCARPUS Annual. Infrequent, but common locally on clay soil deposit in upper Osito Canyon, Plum Canyon, and near Knapp Ranch. Boyd, Raz, & Ross 9454, 1 Apr 1997.


ASTRAGALUS DOUGLASII (Torr. & A. Gray) A. Gray var. DOUGLASH Perennial herb. Widespread and locally common, openings in scrub, mostly on sedimentary substrates, western half of the range. Ross 8348, 7 Apr 1995.


GLYCYPHYRHEZA LEPIDOTA Pursh Perennial herb. Local on benches in riparian woodland and about seeps at scattered sites across the range. Boyd & Wall 8782, 16 May 1996.


LOTUS GRANDIFLORUS (Benth.) Greene var. GRANDIFLORUS Perennial herb. Occasional to locally common in open, xeric scrub, generally on decomposed granite, northwestern end of the range. Ross & Boyd 7683, 4 Apr 1994.


LOTUS HERMANNII (Durand & Hilg.) Greene spp. HERMANNII Perennial herb. Widespread and common on alluvial benches and about seeps. Macfadden 2654, 22 Apr 1931.


LOTUS OBLONGIFOLIUS (Benth.) Greene var. OBLONGIFOLIUS Perennial herb. Common in moist soil along streams and about seeps. McHargue & Miller s.n., 6 Jul 1963.

LOTUS PROCUMBENS (Greene) Greene var. PROCUMBENS Perennial herb. Locally common in grassland and open situations in scrub and woodland, summits of Liebre and Sawmill mountains northward to the edge of the Antelope Valley. Boyd & Raz 9932, 29 May 1997.

LOTUS SALISBIGNOSUS Greene var. SALISBIGNOSUS Annual. Widespread and common in openings of scrub in woodland, extremely plentiful on recent burns. Boyd, Raz, & Ross 9452, 1 Apr 1997.

LOTUS SCOPARIUS (Nutt.) Ottley var. SCOPARIUS Suffrutescose perennial. Widespread, occasional in xeric openings in scrub, locally common on recent burns, old fuelbreaks, etc. Ross & Porter 8422, 4 May 1995.

LOTUS STRIGOSUS (Nutt.) Greene var. HERTILLIUS (Greene) Ottley Annual. Widespread and common in grassland and openings in scrub and woodland. Especially common on recent burns. Boyd & Raz 9917, 29 May 1997.


LUPINUS ALBIFRONS Bentham. var. EMINENS (Greene) C. P. Sm. Small shrub. Uncommon, documented from low elevations near Newhall and Valencia. Wisura & Kelly 4109, 16 Apr 1986.


LUPINUS BENTHAMII A. Heller Annual. Uncommon, documented from the base of the range at the extreme western end of the Antelope Valley and adjacent Peace Valley. Abrams 11726, 20 Apr 1927.


LUPINUS BICOLOR Lindl., ssp. TRIDENTATUS (Earst, ex C. P. Sm.) D. B. Dunn Annual. Widespread and common in grassland, open scrub and woodland, and especially recent burns. Clokey & Templeton 4716, 8 Apr 1930.


LUPINUS EXCUBITUS M. E. Jones var. JOHNSTONI C. P. Sm. in Jeps. Suffruticose perennial. Plants approaching this variety have been documented from grassland and open woodland on the central summit area of Liebre Mountain. Ross & Boyd 7768, 11 May 1994.


LUPINUS FORMOSUS Greene ssp. ROBUSTUS (C. P. Sm.) Conrad Perennial herb. Infrequent in grassland and openings in scrub and woodland, scattered sites in the northern half of the range. Everett & Balls 23800, 22 May 1959.


LUPINUS MICROCARPUS Sims var. MICROCARPUS Annual. Widespread, occasional in open situations in grassland, scrub, and woodland, especially on loose, decomposed granite soil and recent burns. Boyd & Raz 9778, 6 May 1997.


LUPINUS SUCCULENTUS Douglas ex Koch Annual. Occasional to locally common, especially on heavy soil, western edge of the range. Boyd, Raz, & Ross 9475, 1 Apr 1997.


MEDAGCO LUPULINA L. Perennial herb. Occasional in damp soil along streams and other moist disturbed places, scattered sites throughout the range. Ross, Boyd, & Burns 8096, 6 Jul 1994.


MEDAGCO POLYMORPHA L. All. Annual. Widespread and locally common along streams and seeps, and especially in moist disturbed areas. Wheeler 9252, 2 May 1967.

PARKINSONIA ACULEATA L. Tree or large shrub. Locally adventive in generally disturbed situations, scattered across the southern half of the range. White & Devries 6778, 23–24 Jun 1998.

ROBINIA PSEUDOACACIA L. Locally common in lowland, especially on loose, decomposed granite soil and recent burns. Boyd, Mistretta, & Dolan 8532, 8 May 1995.

SPARTIUM JUNCEUM L. Tree or large shrub. Occasional to locally common on road cuts and fill slopes, less frequent along drainages. Boyd & Wall 8776, 16 May 1996.


TRIFOLIUM ALBOPURPUREUM Tott. & A. Gray var. ALBOPURPUREUM Annual. Widespread and locally common in openings in scrub and woodland, and especially in grassland. Runyan 27, 7 Apr 1955.


TRIFOLIUM GRACILENTUM Tott. & A. Gray var. GRACILENTUM Annual. Widespread, but generally uncommon in grassland and open situations in scrub and woodland. Boyd, Raz, & Ross 9482, 1 Apr 1997.


TRIFOLIUM VARIETATUM Nutt. Annual. Uncommon, moist soil along...
stream, Castaic Creek near confluence with Fish Creek. *Boyd, Mestrutta, & Soza* 8844, 12 Jun 1996.


AGACEAE


Quercus berberidifolia Nutt. Large shrub. Widespread and locally common in scrub and woodland, especially in the southern half of the range. *Boyd & Ross* 9016, 8 Oct 1996.

Quercus chrysolepis Lieb. Tree or large shrub. Widespread, forming dense woodlands on mesic exposures of the Liebre, Sawmill, and Sierra Pelona ridge complexes; also abundant as arborescent shrubs in dense oak chaparral on more xeric exposures of these and other ridges. An exceptionally large individual can be found crowning the western summit of Liebre Mountain and other notably large individuals are present on the crest of Sierra Pelona west of Mt. McDill. *Ross & Boyd* 7877, 25 May 1994.

Quercus douglasii Hook. & Arn. Tree. Locally common in open woodlands at the northerwestern end of the range and sporadically southward along the western edge of the range near Oak Flat. *Ross & Boyd* 8315, 21 Sep 1994.


Quercus douglasii Hook. & Arn. × Quercus lobata Née Tree. Plants of intermediate morphology between the putative parents are occasional in the northernwestern corner of the range and at the western edge near Oak Flat. *Benson* 14291, 17 Nov 1949.


Quercus kelloggii Newb. × Quercus wislizenii A. DC. var. frutescens Engelm. Large shrub to tree. Plants of intermediate morphology between the putative parents are occasionally encountered where the two parental taxa occur together, especially on Liebre and Sawmill Mountains. *Boyd* 10029, 10 Sep 1997.

Quercus lobata Née Tree. Locally common in open woodlands at the northwestern end of the range and sporadically southward along the western edge of the range, especially near Valencia and Newhall. *Ross & Boyd* 8316, 21 Sep 1994.


FRANKENIACEAE


GERANIACEAE


GENTIANACEAE

Centaurium exaltatum (Grieth.) Piper Annual. Local in drying streambed along Castaic Creek, upstream from Elderberry Forebay, and at edge of drying fault sag, north base of Liebre Mountain at Cow Spring Canyon. *Ross & Boyd* 8322, 21 Sep 1994.


GERANIACEAE


GROSSULARIACEAE


Ribes quercetorum Greene Small shrub. Locally common in scrub and woodland on alluvial benches and slopes with mesic exposures, northern half of the range. Particularly common at the northwestern end of the range and often forming dense thickets on certain slopes. *Boyd & Raz* 9348, 26 Mar 1997.

AESCULUS CALIFORNICA (Spach) Nutt. Tree. Locally common in oak and foothill pine woodlands across Portal Ridge and the northern flank of Liebre and Sawmill mountains, eastward to the vicinity of Elizabeth Lake Canyon. Natural populations observed south of Hiatt Canyon in the east and upper Liebre Gulch and the Gillespie Mine area of Bear Canyon in the west. Boyd, Ross, & Burns 8140, 7 Jul 1994. Plants found further south, in the vicinity of Powerhouse No. 2 in San Francisquito Canyon, are presumed to be derived from former plantings.

HYDROCOTYLLACEAE


HYDROPHYLLACEAE

EMEMANIATE PENDULIFLORA Benth. var. PENDULIFLORA Annual. Widespread, occasional in xeric openings in scrub, but especially common on recent burns. Boyd & Raz 9745, 6 May 1997.

ERIODICTYON CRASSIFOLIUM Benth. var. CRASSIFOLIUM Large shrub. A single collection from Kings Canyon appears to be this taxon, otherwise, the variety is not known from the range. Dudley & Lamb 4343, 8 Jun 1896.

ERIODICTYON CRASSIFOLIUM Benth. var. NIGRESCENS Brand Large shrub. Widespread and common in scrub and open woodland, especially on recovering burns, old fuelbreaks, and open alluvial benches. Ross & Porter 8311, 4 May 1995.


EUCRYPTA CHRYSANTHEMIFOLIA (Benth.) Greene var. CHRYSANTHEMIFOLIA Annual. Widespread and locally common, mesic openings and understory of chaparral and woodland, often about shaded bases of boulder outcrops, especially common on recent burns. Ross & Porter 8406, 4 May 1995.


PHACELIA BRACHYLOBA (Benth.) A. Gray Annual. Generally scarce except on recent burns in scrub, where locally common, western half of the range. Ross & Boyd 2820, 6 Jun 1990.


PHACELIA DAVIDSONI A. Gray Annual. Locally common in grassland and open understory of pine and oak woodlands from the edge of the Antelope Valley to the crests of the Liebre, Sawmill, and Sierra Pelona ridge systems. Davidson 2559, 25 May 1975.


PHACELIA IMBICATA Greene ssp. IMBICATA Perennial herb. Local on rocky slopes and alluvial benches in scrub and woodland openings, scattered species across the range. Boyd & Wall 8778, 15 May 1996.


PHOLISTOMA MEMBRANACEUM (Benth.) Constance Annual. Occasional, areas of desert transition at the northeastern end of the range. Broughtom & Muller 1350, 21 Apr 1971.


JUGLANDACEAE

JUGLANS CALIFORNICA S. Watson var. CALIFORNICA Tree or large shrub. Occasional in scrub and woodland of lower Bouquet Canyon, scarce at other sites in lower elevations to the west and south. Boyd & Raz 8991, 8 Oct 1996.

*LAMIAEAE

ACANTHOMANTHA OBOVATA Jeps. ssp. CORDATA Jokerst Annual. Scarce on moist, low competition sites on clay soil deposits in upper Otso Canyon. Likely present in other islands of clay soil lower in Otso Canyon and adjacent areas at the western edge of the range. Boyd, Mistretta, & Dolan 8558, 18 Apr 1996.


LEPECHINIA sp. var. Small shrub. Occasional in chaparral, documented in the Liebre Mountains region only from the summit and northern flank of Red Mountain in upper Clearwater and Ruby canyons. Boyd & Raz 9733, 6 May 1997. A paper describing this shrub is in preparation and will be presented elsewhere. It combines floral and vegetative characters of L. calycina and L. cardiophylla, but differs from those taxa in its floral bracts and in-

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florescence architecture, among other characters. Another population of this putative new species occurs approximately 35–40 km to the southwest in the Toga Toga Mountains of Ventura County, in the vicinity of Tar Canyon, near its confluence with Sespe Canyon.

*Marrubium vulgare* L. Saffron-wort perennial. Widespread, but generally only common in areas of past disturbance, and especially intensive grazing. *Boyd & Raz* 8944, 24 Sep 1996.

*Mentha arvensis* L. Perennial herb. Local in moist soil along streams in understory of riparian woodland, such as lower Ruby Canyon, central San Francisquito Canyon, and Soledad Canyon near Ravenna. *Raz & Boyd* 003, 23 Oct 1996.


*Rosmarinus officinalis* L. Small shrub. A prostrate selection of this species has been introduced as a roadside planting/slope stabilizer along the Old Ridge Route and other roads in the National Forest. Apparently capable of spreading locally, but not aggressively so. *Ros 8358, 7 Apr 1995.


Salvia carduacea Benth. Annual. Locally common in well-drained soils, northwestern end of the range and areas bordering the Antelope Valley; infrequent and scattered elsewhere throughout the range, especially in the vicinity of Acton. *Boyd 8707, 25 Apr 1996.


Salvia leucophylla Greene Small shrub. Locally common in scrub, southwestern quarter of the range. *Doby 672, 16 May 1969.


Trichostema lanceolatum Benth. Annual. Widespread, locally common in grassland and ruderal areas subjected to heavy grazing. *Boyd & Raz* 8957, 24 Sep 1996.

Lauraceae

*Bumelia californica* (Hook. & Arn.) Nutt. Tree. Documented from an early collection near Sandberg, where possibly planted. Not observed during our surveys. *Clare s.n., 7 Apr 1930.

Linaceae


Loasaceae


Mentzelia veatchiana Kellogg Annual. Widespread and locally common, openings in scrub and woodland; especially common on recent burns. *Spho 339, 10 May 1959.


Lythraceae

Lythrum californicum Torr. & A. Gray Perennial herb. Local in moist soil along stream, Castaic Creek upstream from Elderberry Forebay, and about a fault sag, Peace Valley just west of Quail Lake. *Boyd, Mistretta, & Soza* 8838, 12 Jun 1996.

Malvaceae


Malacothamnus fremontii A. Gray Small shrub. Widespread but generally uncommon in scrub and woodland, except in areas recovering from a recent burn. *Boyd & Raz* 9751, 6 May 1997.

Malacothamnus marrubioideus (Durand & Hilg.) Greene Small shrub. Southers and western edge of the range, generally uncommon in scrub and woodland, except in areas recovering from a recent burn. *Wolf 686, 27 Jul 1927.


Malva parviflora (DC) A. Gray ex Benth. sp. MALVAFLORA
SIDALCEA MALVAEFLORA (DC) A. Gray ex Benth. ssp. SPARSIPELLOIA
C. L. Hitch. Perennial herb. Local in grassland and moist openings in
scrub, Bouquet Canyon and across the northern edge of the
range. Hitchcock 19265, 2 Jun 1922.
SIDALCEA NEOMEXICANA A. Gray ssp. RUGOSA (Rob. ex A. Gray)
C. L. Hitch. Perennial herb. Scarce, documented by early collec-
tions near Elizabeth Lake and head of San Francisco Can-
yon. Davidson s.n., May 1920.
SPHAERALEA EMORI (Trot. var. Variabilis (Cockerel)) Kearney Suf-
fruticoso perennial. Scarce, areas of desert transition, upper Mint
Canyon. Templeton 1460, 19 May 1931.
NYCTAGINACEAE
MIRABILIS CALIFORNICA A. Gray Sufferfruticoso perennial. Occasional,
open situations in xeric scrub, lower elevations at the southern
MIRABILIS MULTIFLORA (Trott.) A. Gray var. PUBESCENTS S. Watson Per-
ennial herb. Scarce, documented by early collections from near
Manzana, Neenach, and Elizabeth Lake. Simontacchi 45, 26 May
1935.
OLEACEAE
FORESTIERA PUBESCENTS Nutt. Large shrub. Uncommon on alluvial
benches and about springs, scattered sites including Bouquet,
Mint, and Clearwater canyons, etc. Henrickson 2262, 17 Apr
1966.
FRAXINUS IPITATA Hook. & Arn. Large shrub. Locally common on
mesic exposures in scrub and woodland, western end of the range.
Ross 8337, 26 Apr 1993.
*FRAXINUS UHDENI (Wenz.) Lingelsh. Tree. Scarce, wetland area in
San Francisco Canyon at east base of Red Mountain. Widely
cultivated in southern California as a street tree. Adventive oc-
currences are likely to increase in riparian situations at the urban-
FRAXINUS VELUTINA Trott. var. CORIACEA (S. Watson) Jeps. Tree. Un-
common in drainages at the northern base of Sawmill Mountain and
ONYGACEAE
CAMISSONIA BITORTA (Nutt. ex Trott. & A. Gray) P. H. Raven Annual.
Widespread and locally common in sandy, open situations on
slopes and alluvial benches, especially recent burns. Gifford 485,
16 Mar 1935.
CAMISSONIA BOOTHII (Douglas) P. H. Raven ssp. DECORTICANS (Hook.
& Arn.) P. H. Raven Annual. Local on open, shaley or clayey
outcrops in xeric scrub; most frequent in the western end of the
range, but scattered eastward to the Agua Dulce area. Boyd, Raz,
& Ross 9457, 1 Apr 1997.
CAMISSONIA CALIFORNICA (Trott. & A. Gray) P. H. Raven Annual.
Widespread and locally common, openings in xeric scrub and
recent burns. Raven 13096, 1 Apr 1939.
CAMISSONIA CAMPESTRIS (Greene) P. H. Raven ssp. CAMPESTRIS An-
ual. Widespread and locally common in grassland and open
CAMISSONIA CLAVIFORMIS (Trott. & Frém.) P. H. Raven Annual. Local
on xeric rocky slopes of Ritter Ridge at the northeastern end of the
CAMISSONIA CONFUSA P. H. Raven Annual. Scarce, recent burn on
slope between Leona and Lost valleys. Ross & Steinmann 8561,
8 May 1995.
CAMISSONIA GRACILIFLORA (Hook. & Arn.) P. H. Raven Annual.
Widespread, but inconspicuous and generally never common, low
competition sites in grassland, alluvial benches, and openings in
CAMISSONIA HIRTICLLA (Greene) P. H. Raven Annual. Widespread,
occasional in grassland and xeric openings of scrub and wood-
land; locally common on recent burns. Craig 480, 19 Jun 1927.
CAMISSONIA IGNOTA (Jeps.) P. H. Raven Annual. Widespread, occa-
sional in grassland and xeric openings of scrub and woodland;
locally common on recent burns. Ross & Porter 8493, 4 May
1995.
CAMISSONIA INTERMEDIA P. H. Raven Annual. Widespread, occasional
in grassland and xeric openings of scrub and woodland; locally
CAMISSONIA MACRANTHA (Sprang.) P. H. Raven Annual. Scarce, Cas-
tatic Canyon above Elderberry Forebay. Ross, Boyd, & Arnseth
4893, 30 Apr 1991.
CAMISSONIA PALLIDA (Abrahms) P. H. Raven ssp. PALLIDA Annual.
Infrequent, open habitats, as in Soledad Canyon Wash and on
Parker Mountain near Acton. Ross, Boyd, & Arnseth 4948, 30
Apr 1991.
CAMISSONIA PALMERI (S. Watson) P. H. Raven Annual. Local on
open, xeric slope of sedimentary substrate, extreme northwest
corner of the range. Boyd 10127, 1 Apr 1998.
CAMISSONIA STRIGULOSA (Fisch. & C. A. Mey.) P. H. Raven Annual.
Widespread and locally common in grassland, scrub and wood-
land openings, and especially on alluvial benches. Ross & Porter
8457, 4 May 1995.
CLARKIA BOTTAE (Spach) F. H. Lewis Annual. Uncommon, Soland Canyon region.
CLARKIA CYLINDRICA (Jeps.) F. H. Lewis & M. R. Lewis ssp. CYLIND-
rica Annual. Widespread and locally common, openings in scrub and
woodland, but especially on rocky slopes with more
Uncommon, mesic openings in scrub and woodland, San Francis-
CLARKIA PURPUREA (Curtis) A. Nelson & J. F. Machr. ssp. QUADRI-
VULNERA (Douglas ex Lind.) P. H. Lewis & M. R. Lewis Annual.
Widespread and locally common in grassland and mesic openings in
CLARKIA RHOMBIOIDEA Douglas Annual. Locally common, understory
of woodland on crest and northern flanks of Liebre and Sawmill
CLARKIA UNGUICULATA Lindl. Annual. Widespread and locally com-
mon, mesic openings in scrub and woodland. Ross & Porter
8500, 4 May 1995.
CLARKIA XANTIANA A. Gray ssp. XANTIANA Annual. Locally common,
open areas on steep slopes with mosaic of woodland and grass-
land, Cold Canyon at east end of Liebre Mountain. Ross & Boyd
EPILOBIOUM BRACHICARPM C. Presl Annual. Widespread, occasional,
open areas in scrub and woodland; locally common, margins of
sag ponds along San Andreas Rift zone. Ross & Boyd 8327, 21
Sep 1997.
EPILOBIOUM CANUM (Greene) P. H. Raven ssp. CANUM Sufferfruticoso
perennial. Widespread, occasional in mesic situations within
scrub and woodland; locally common on open, rocky slopes with
EPILOBIOUM CANUM (Greene) P. H. Raven ssp. LATIFOLIAM (Hook.) P.
H. Raven Sufferfruticoso perennial. Infrequent on open, rocky slopes
with mesic exposures and mesic situations within scrub and
woodland, northern half of the range. Raz & Boyd 9123, 29 Oct
1996.
EPILOBIOUM CILIATUM Raf. ssp. CILIATUM Perennial herb. Widespread
and common in moist soil along streams and seeps. Ross & Boyd
EPILOBIOUM POLIOSUM (Trott. & A. Gray) Suksdorf Annual. Infrequent
in mesic chaparral openings, north face of Red Mountain, and
along ephemeral stream near Pacific Crest Trail, Portal Ridge.
Ross, & Boyd 7240, 23 May 1993.
**PAEONIACEAE**


**PAVONIACEAE**


**PAVONIACEAE**


**DICENTRA**


**DICYTIS**


**ESCHSCHOLZIA**


**ESCHSCHOLZIA**

*Eschscholzia californica* Cham. var. penduliflora (Greene) Munz Annual. Widespread, occasional in grassland, xeric openings in scrub and woodland; locally common on recent burns. *Boyd & Raz* 9419, 31 Mar 1997.

**ESCHSCHOLZIA**


**PAPAVERACEAE**


**ESCHSCHOLZIA**

*Eschscholzia californica* Cham. var. incognita (Greene) Munz Annual. Widespread, occasional to locally common in grassland and openings in scrub and woodland. *Wheeler* 9342, 8 May 1997.

**ESCHSCHOLZIA**


**DICENTRA**


**DICYTIS**


**ESCHSCHOLZIA**


**ESCHSCHOLZIA**

*Eschscholzia californica* Cham. var. penduliflora (Greene) Munz Annual. Widespread, occasional in grassland, xeric openings in scrub and woodland; locally common on recent burns. *Boyd & Raz* 9419, 31 Mar 1997.

**ESCHSCHOLZIA**


**PAPAVERACEAE**


**ESCHSCHOLZIA**


**ESCHSCHOLZIA**

*Eschscholzia californica* Cham. var. penduliflora (Greene) Munz Annual. Widespread, occasional in grassland, xeric openings in scrub and woodland; locally common on recent burns. *Boyd & Raz* 9419, 31 Mar 1997.

**ESCHSCHOLZIA**


**PAPAVERACEAE**


LINANTHUS LINIFLORUS (Benth.) Greene Annual. Local in grassland and open situations within scrub and woodland, northwestern end of the range; also known from an old collection near Ravenna. *Rosaceae* 9517, 16 Apr 1997.

LINANTHUS PARKEYI (A. Gray) Greene Annual. Scarce and local in grassland and open situations within scrub and woodland, northwestern end of the range. Most populations documented exhibited white flower morphs, although a few were predominantly, or entirely, blue. *Rosaceae* 8395, 26 Apr 1995.

LINANTHUS PYRMAELUS (Brand) J. T. Howell Annual. Local in protected, open habitats within scrub, widely scattered sites in western half of the range. Inconspicuous and easily overlooked. *Rosaceae* 9265, 2 May 1967.


NAVARRETA ATRACTYLOIDES (Benth.) Hook. & Arn. Annual. Scarce, hard-packed soil at edge of chaparral, Green Valley Pasture area of upper San Francisquito Canyon; also documented by an early collection from near Newhall. *Rosaceae* 2818, 6 Jun 1990.

NAVARRETA FOSSALIS Moran Annual. Local on dry mud of vertical pools on Cruzan Mesa and in adjacent Plum Canyon. This station represents the northern limit for the species and a significant disjunction from the previously known range in western Riverside and San Diego counties and northwestern Baja California, Mexico. *Rosaceae* 10912, 5 Jun 1990.

NAVARRETA JARECHI Eastw. Annual. Local on margins of dried vertical pools on Cruzan Mesa and in adjacent Plum Canyon. This station represents one of the southern-most recorded for the species. *Rosaceae* 10913, 5 Jun 1990.


POLYGONACEAE

CENTROSTEGIA THUBERI A. Gray ex Benth. in DC. Annual. Local in open, decomposed granite within oak woodland along crest of Liebre Mountain; also known from areas of desert transition, as at Acton and along Portal Ridge. *Centrostegia* 8073, 23 Jun 1994.

CHORIZANTHE BREVICORNU Tolt. var. BREVICORNU Annual. Scarce, a few plants found growing in dried bed of Castaic Creek, at confluence with Fish Creek. *Chrozophora* 8830A, 25 May 1996.

CHORIZANTHE BREVIOLEO S. Watson Annual. Scarce, plants referable to this subspecies have been documented from Litaia's Mountains, Antelope Valley near Palmahle, and Parker Mountain. *Chrozophora* 9512, 23 Apr 1952.

CHORIZANTHE BIGELOVII (A. Gray) Greene Annual. Scarce, documented from the northeastern and northwestern ends of the range. *Chrozophora* s.n., 14 Apr 1962.

CHORIZANTHE DIESIS (Benth.) Greene Annual. Infrequent, documented by early collections along the edge of Antelope Valley. *Chrozophora* 948, 16 Jun 1918.

CHORIZANTHE LINIFLORUS (Benth.) M. E. Jones ssp. BIZONATA A. D. Grant & V. E. Grant Annual. Common in grassland and openings in scrub and woodland, northwestern quarter of the range, but especially along the base of the range. *Chrozophora* 339, 26 Feb 1965.

CHORIZANTHE AUREUS (A. Gray) ex Benth. var. AUREUS H. Mason Annual. Widespread and common in grassland and openings in scrub and woodland. *Chrozophora* 8737, 7 May 1996.

CHORIZANTHE AUREUS (Nutt.) Greene ssp. AUREUS Annual. Uncommon, documented from widely scattered localities, but mostly along the edge of the Antelope Valley. *Chrozophora* 948, 16 Jun 1918.


ERIOGONUM BRACHYANTHUM Coville Annual. Scarcely, documented by an early collection from near Acton. Elmer 3657, Jun 1902.


ERIOGONUM DAVIDSONI Greene Annual. Infrequent, but locally common in scrub openings, and on open, sandy benches, scattered throughout the range. Ross & Boyd 8503, 20 Apr 1994.


ERIOGONUM GRACILE Benth. var. GRACILE Annual. Widespread and locally common in grassland, openings in scrub and woodland, and on recent burns. Boyd & Raz 8954, 24 Sep 1996.


ERIOGONUM NUDUM Benth. var. PAUCEFOLIUM S. Watson Perennial herb. Locally common on steep, open slopes of chert and gneiss with mesic exposures, openings in scrub and woodland and occasionally in grasslands, western half of the range. Ross & Boyd 9293, 21 Sep 1994.


ERIOGONUM ORDI S. Watson Annual. Locally common on steep slopes of barren gray clay exposed in lower Bouquet Canyon, northeast of Cuzan Mesa, and in upper West Fork Liebre Gulch. Boyd & Mistretta 8742, 1 May 1996. An historical collection from “Liebre Station” (Hoffmann s.n., 6 Jun 1930) may have been from similar substrate in a portion of Liebre Gulch now inundated by Pyramid Lake.


ERIOGONUM SAXATILE S. Watson Perennial herb. Local in xeric, rocky openings and scree deposits in scrub at scattered sites such as saddle between Burnt Peak and Little Burnt Peak, summit of Red Mountain, and central summit of Sawmill Mountain. Ross & Boyd 7829, 11 May 1994.


LASTARRIAREA CORICAEA (Goodman) Hoover Annual. Scarce, open gravelly alluvial benches along Castaic Creek at confluence with Fish Creek, and in Plum Canyon. Boyd, Ross, & Arness 4917, 30 Apr 1991.


POLYGONUM AMBIBIUM L. var. EMERSUM Michx. Perennial herb. Locally common on margins of Elizabeth Lake and occasional at other lakes and sag ponds along the San Andreas Rift. Boyd & Raz 9073, 14 Oct 1996.


PORTULACACEAE

CALANDRINIA CILIATA (Ruiz & Pav.) DC. var. MENGZIESII (Hook.) J. F. Macbr. Annual. Widespread and common in grassland, mesic scrub and woodland openings, and especially on recent burns. Ross, Boyd, & Arness 4906, 30 Apr 1991.

CALYPTERIUM MONANDRUM Nutl. in Torr. & A. Gray Annual. Wides-
spread and common in open sandy situations is grassland, scrub
and woodland openings, and especially on recent burns. Boyle &

Claytonia exigua Tort. & A. Gray ssp. eximia Annual. Widespread
and locally common in open situations, mesic slopes, soil pockets
on rock faces, shaded alluvial benches. Ross, Boyle & Arnason
4816, 29 Apr 1991.

Claytonia pumila var. Douglas ex Hook. ssp. pumila var. annuali.
Widespread and common, mesic exposures in grassland, scrub,

Claytonia pumila var. Douglas ex Hook. ssp. utahensis (Rydby.) J.
D. Miller & K. L. Chambers Annual. Rare, documented from

Claytonia perfoliata D. Donn ex Wildl. ssp. intermontana J. D.
Miller & K. L. Chambers Annual. Infrequent, but common locally,
mesic situations, upper north flank of Liobre Mountain and

Claytonia perfoliata D. Donn ex Wildl. ssp. mexicana (Rydby.)
J.D. Miller & K. L. Chambers Annual. Infrequent, documented from
southwestern end of the range. Wheeler 9197, 30 Apr 1967.

Claytonia perfoliata D. Donn ex Wildl. ssp. perfoliata Annual.
Widespread and common, mesic exposures in grassland, scrub,

Claytonia rubra (J. T. Edwall) Tidestr. ssp. rubra Annual. Wide-
spread and common, mesic exposures in grassland, scrub,
and woodland. Ross & Boyd 7781, 11 May 1944.

Portulaca oleracea L. Annual. Scarce, moist disturbed sand
along Cassic Creek, upstream from Elderberry Forebay. Boyd et
al. 8910, 11 Jul 1996.

FIMULACEAE

*Anagallis arvensis* L. Annual. Scarce, local in wet meadow at

Androscne exoniata L. ssp. acuta (Green) G. Robb. Annual.
Occasional in grassland and openings in scrub at the northern

Dodecatheon clevelandii Greene ssp. sanctarium (Green) Abruns Geophyte. Scarce, but common locally on heavy soil.
Lower San Francisquito Canyon and adjacent areas to the west,
south of Red Mountain. Boyd & Wall 8541, 4 Apr 1996.

RANUNCULACEAE

Aquilera formosa Fisch. Perennial herb. Widespread, but uncom-
mon, shady situations along streams, as in Red Fox Canyon, Rideo

Claytonia lamiata Nutt. Liana. Widespread and common in scrub,

Claytonia liqueusculifolia Nutt. in Tort. & A. Gray Liana, Widespread
and locally common, climbing on riparian vegetation in areas
with reliable water supplies. Boyle & Raz 8951, 24 Sep 1996.

Delphinium parvice A. Gray ssp. parvisi Geophyte. Occasional in
grassland and openings in woodland, northwestern end of the
range. Simontacchi 41, 26 May 1925.

Delphinium parvice A. Gray ssp. parvicei Geophyte. Widespread and
common in grassland and openings in scrub and woodland, es-
specially mesic rocky slopes and scree deposits. Boyd & Raz 9725,
6 May 1997.

Delphinium patens Bentm. ssp. montanum (Munz) Ewan Geophyte.
Infrequent, mesic understory of oak woodland on the upper north-
ern flank of Sierra Pelona and Sawmill Mountain. Boyd & Raz

Iopryxoccidentales Hook. & Arr. Geophyte. Locally common in mesic
understory of scrub and woodland on northern flank of Sierra Pelona;

Ranunculus aquatilis L. var. capellaceus (Thuill.) DC. Aquatic
perennial herb. Scarce, documented by early collections from
Lake Elizabeth and Bouquet Reservoir. Munz 6819, 9 Jun 1923.

Ranunculus californiae Bentm. Perennial herb. Scarce, docu-
mented by early collections from near Sandberg and in San Fran-
cisco Canyon. Johnstone s.n., 7 Apr 1940.

Ranunculus cymbalaria Pursh ssp. saximontanus (Fernald) Thore Perennial herb. Scarce, documented from Dry Canyon.

Ranunculus herculeanus Hook. & Arr. Annual. Locally common,
mesic situations in understory of chaparral, Bouquet, Clearwater,

RHAMNACEAE

Ceanothus crassifolius Tort. Large shrub. Locally common in
chaparral, southern edge of the range in Soledad Canyon, from

Ceanothus crassifolius x Ceanothus cuneatus A. Gray var. cuneatus (Hook.)
Nutt. var. cuneatus Large shrub. Scarce natural hybrid in sand
of scrub between Bee and Agnas Dulce canyons in Soledad Can-


Ceanothus cuneatus (Hook.) Nutt. var. cuneatus x Ceanothus Gregii A. Gray var. vestitus (Greene) McMinn Large shrub. Occasional plants suggesting various levels of hybrid intermid-
acy are encountered along the crests of Sierra Pelona, Liobre, Sawmill, and Grass mountains. Donahue s.n., 20 May 1983.

Ceanothus Gregii A. Gray var. vestitus (Greene) McMinn Large shrub. Common in scrub across Ritter and Portal ridges, and spoc-
adic southward onto the crests of Sierra Pelona, Liobre, Sawmill, and Grass mountains. Wolf 10998, 1 Jul 1941.

Ceanothus indicerrimus Hook. & Arr. Large shrub. Locally com-
mon in scrub and woodland mosaic at higher elevations along
the crests of Sierra Pelona, Liobre, Sawmill, and Grass mountains. Ross, Mistretta, & Quici 3982, 28 Jun 1990.


Ceanothus leucoderms Nutt. var. oliganthis Large shrub. Infre-
quent in chaparral, southwestern end of the range. Wolf 11134, 2
Aug 1941.

Rhannus Californiae Eschsh. ssp. Californiae Large shrub. Oc-
casional in scrub, scattered sites in the central portion of the

Rhamnus croceae Nutt. Large shrub. Infrequent, but common locally
at lower elevations in the southwestern portion of the range.
Wheeler 9202, 30 Apr 1967.

Rhamnus Eucalpsica Kellogg Large shrub. Widespread and common
in scrub and woodland, especially on mesic exposures. Ross &

Rhamnus tomentella Bentm. ssp. tomentella (Greene) J. O. Sawyer Large shrub. Locally common in scrub and woodland at moderate
and higher elevations, northern half of the range. Boyd & Raz
9113, 24 Sep 1996.

ROYACEAE

Aldingstoma fasciculatum Hook. & Arr. var. fasciculatum Large shrub.
Widespread and common in scrub and woodland. Boyd & Raz
9834, 28 May 1997.

Amlanchea utahensis Knecht Large shrub. Uncommon in scrub,


**PruNUS FASCICULATA** A. Gray Large shrub. Locally common in areas of desert transition at the extreme northeastern end of the range. Boyd & Raz 9995, 18 Jun 1995.


**PURSHA TRIDENTATA** (Parsh) DC. var. GLANDULOSA (Curtis) M. E. Jones Large shrub. Scarse, documented by an early collection from Bouquet Canyon. Templeton 6267, 21 May 1947.

**ROSA CALIFORNICA** Cham. & Schltdl. Small shrub. Widespread and common in understory of oak and riparian woodlands on benches; less frequently in mesic situations in chaparral and about seeps. Ross & Boyd 2855, 6 Jun 1990.


**RUBIACEAE**


**GALIUM ANGUPTIFOLIUM** Nutt. ssp. ANGUPTIFOLIUM Suffruticose perennial. Widespread and common in scrub and woodland, especially in more open and xeric situations. Ross & Boyd 2821B, 6 Jun 1990.


*GALIUM PARIENSE* L. Annual. Scarse, disturbed sandy benches along Castaic Creek near confluence with Fish Creek. Boyd & Mistretta 8816, 23 May 1996.


**SAUCURACEAE**

**ANEMOPSIS CALIFORNICA** (Nutt.) Hook. & Arn. Perennial herb. Locally common in the extensive wetland areas about Knapp Ranch at the head of Cienaga Canyon, and in similar situations in San Francisquito Canyon at the east base of Red Mountain. Ross & Boyd 8169, 7 Jul 1994.

**SAXIFRAGACEAE**

**LITHOPHRAGMA AFFINE** A. Gray Geophyte. Scarse, documented by early collections from near Newhall and in Bouquet Canyon. Benjamine 177, 28 Apr 1929.

**LITHOPHRAGMA BOLANDERI** A. Gray Geophyte. Common in shaded woodland understory across north face of Liebre and Sawmill mountains; also documented by an early collection from near Newhall. Peirson 3079, 3 Jun 1922.


**SCROPHULARIACEAE**

**ANTHRINNUM COLUTERIANUM** Benth. in DC. Annual. Widespread, occasional in open situations on xeric slopes, more frequent in recently burned scrub. McHargue & Miller s.n., 6 Jul 1963.


**ANTHRINNUM MULTIFLORUM** Pennell Perennial. Widespread, generally on recent burns in scrub and woodland, and occasionally cleared areas such as fuelbreaks and road berms. Ross & Boyd 6611, 5 Jul 1997.


**CASTILLEJA APPLEGATEI** Fern. ssp. MARTINI (Abrams) T. I. Chuang &


CASTILLEJA GLEASONII Elmer Parasitic perennial herb. Scarce, Plants matching this taxon in vesture and general leaf and floral morphology were encountered on a steep, east-facing rocky ridge just west of the Knapp Ranch, upper Cienega Canyon, and at the west end of Liebre Mountain at saddle between Liebre Gulch and Salt Creek. Castilleja gleasonii is generally considered to be endemic to the central San Gabriel Mountains, where typical habitat is understory of montane coniferous forest (Mistretta & Brown 1987). Chang & Heckard (1993) have suggested that C. gleasonii is a hybrid between C. affinis and C. foliolosa. At Knapp Ranch, C. gleasonii is closely associated with C. foliolosa. But C. affinis not documented. Bohd & Ross 9437; 31 Mar 1997.


COLLINSIA CALLOSAA Parish Annual. Infrequent, grassland and woodland understory, northern edge of the range. Howell 6669, 6 Jun 1931.


COLLINSIA HETEROPHYLLA Buist ex Graham var. ASTROMONTANA (Newsom) Munz Annual. Local in scrub and woodland openings at the western end of the range. Ross & Bohd 7725, 10 May 1994.


KECKIELLA BREVIFLORA (Lincl.) Straw var. BREVIFLORA Small shrub. Occasional, rocky openings in scrub, especially in the northern half of the range. Michener 3696, 1 Jul 1980.


MIMULUS BREVIPESS Benth. Annual, occasional in open situations on xeric slopes, more frequent on recent burns in scrub and woodland. Bohd & Raz 9750, 6 May 1997.


MIMULUS GUTATUS DC. Annual or perennial herb. Widespread and common in moist soil along streams, about seeps, and in seasonally wet soil on rock outcrops. Bohd & Raz 9774, 6 May 1997.


MIMULUS PARISHII Greene Annual. Scarce, documented by early collections from Soledad Canyon. Craig 489, 19 Jan 1927.


ORTHOCARPSUS PURPURACENS Benth. var. PALLIDUS D. D. Keck Parasitic annual. Scarce, low elevations at the southern edge of the range. Wisser & Kelly 4108, 16 Apr 1986.

ORTHOCARPSUS PURPURACENS Benth. var. PURPURACENS Parasitic annual. Widespread and locally common in grassland and openings in scrub and woodland. Ross 8349, 7 Apr 1995.


PENSTEMON HETEROPHYLLUS Lindl. var. AUSTRALIS Munz & T. I. M.


*Penstemon rostriflorus* Kellogg Suffruticose perennial. Occasional in scrub and woodland openings on the upper slopes of Liebre and Sawmill mountains; also documented by an early collection from near Acton. *Boyd et al. 10005, 8 Jul 1997.*

*Penstemon labrosus* Kellogg Suffruticose perennial. Widespread, but generally uncommon, mostly openings in scrub and woodland. *Boyd & Raz 9915, 29 May 1997.*

*Veronica peregrina* L. Annual. Locally common in beds of vernal pools on Cruzan Mesa and in Plum Canyon, also about cattle ponds in Grasshopper Canyon. *Boyd & Raz 9138, 4 Mar 1997.*

**Simerubaceae**

*Allanthus altissima* (Mill.) Swingle Tree. Locally established about old homesteads, and occasionally along roads, scattered sites throughout the range. *Ross & Porter 8305, 4 May 1995.*

**Solanaceae**


*Lycium cooperi* A. Gray Small shrub. Local in areas of desert transition at the eastern end of the range. *Ross, Boyd, & Arnseth 5011, 30 Apr 1991.*


*Nicotiana attenuata* Torr. Annual. Scarce, documented by early collections from along the southern and western margins of the range. *Munz & Johnston 11129, 4 Sep 1928.*

*Nicotiana glauca* Graham Large shrub. Widespread, occasional to locally common in disturbed riparian areas, about old habitations, and overgrazed sites; scattered elsewhere in generally disturbed situations. *Ross & Banks 7519, 13 Apr 1994.*

*Nicotiana quadrivalvis* Pursh Annual. Widespread, but generally infrequent, openings in scrub, alluvial benches, and especially on recent burns. *Ross & Boyd 7749, 10 May 1994.*


*Solanum elaeagnifolium* Cav. Perennial herb. Local in disturbed grassland on fuelbreaks along the Old Ridge Route, west of Castaic Canyon; also documented from a railroad embankment in Soledad Canyon. *Boyd, Elvin, & Jotikasthira 8869, 25 Jun 1996.*


**Sterculiaceae**

*Fremontodendron californicum* (Torr.) Coville Large shrub. Local in chaparral, upper eastern flank of Liebre Mountain, north flank of Red Mountain in upper Clearwater Canyon, and on the southern end of Sierra Pelona. *Boyd & Raz 9731, 6 May 1997.*

**Tamaricaceae**


**Tropaeolaceae**


**Ulmaceae**


*†Ulmus pumila* L. Tree. Scarce as roadside waif, head of Bouquet Canyon at Lincoln Crest, and at confluence of Castaic and Fish creeks. *Boyd & Mistretta 8831, 23 May 1996.*

**Urticaceae**


**Valerianaceae**

*Plectritis ciliosa* (Greene) Jeps. ssp. *insignis* (Suksd.) D. Morey Annual. Locally common in mosaic of grassland and oak woodland, crest of Sierra Pelona, west of Mount McDill. *Boyd & Raz 9658, 1 May 1997.*

**Verbenaceae**


**Violaceae**

*Viola purpurea* Kellogg ssp. *mohavensis* (M. S. Baker & J. C. Clausen) J. C. Clausen Geophyte. Uncommon in grassland and


**VISCACEAE**


**Phoradendron macrophyllum** (Engelm.) Cockerell Parasitic perennial herb. Widespread and common on *Salix, Populus, Platanus*, and other riparian trees; infrequently observed on *Baccharis salicifolia*. Boyd & Raz 9864, 28 May 1997.


**ZYGOPHYLLACEAE**

**Larrea tridentata** (Sessé & Moc. ex DC.) Coville Large shrub. Locally common on xeric rocky slopes in areas of desert transition at the northeastern end of the range. *Boyd & Raz* 9057, 14 Oct 1996.


**ANGIOSPERMAE—MONOCOTYLEDONES**

**AGAVACEAE**

**Yucca brevifolia** Engelm. var. brevifolia Tree. Locally common in xeric scrub, areas of desert transition at the northeastern end of the range. Boyd & Raz 9062, 14 Oct 1996.


**ALLIACEAE**


**Allium fimbriatum** S. Watson var. fimbriatum Geophyte. Widespread, but generally rather local, open areas with cobblely soil in scrub and grassland. Boyd & Raz 9689, 1 May 1997.


**Allium howellii** Easw. var. clokeyi Ownbey ex Traub Geophyte. Scarce, documented by an early collection from Castaic Canyon. Jones s.n., 26 Apr 1934.

**Allium lacunosum** S. Watson var. davisiae (M. E. Jones) McNeal & Ownbey Geophyte. Scarce, documented by an early collection from the Antelope Valley at the northeastern end of the range. *Minthorn* s.n., 4 Apr 1926.


**Bloomeria crocea** (Torr.) Coville var. crocea Geophyte. Widespread and common in grassland, scrub, and woodland, generally in the southern half of the range. Boyd & Raz 9772, 6 May 1997.

**Bloomeria crocea** (Torr.) Coville var. montana (Greene) J. W. Ingram Geophyte. Widespread and common in grassland, scrub, and woodland, generally in the northern half of the range. Boyd & Raz 9918, 29 May 1997.

**Dichelostemma pulchellum** (Salish.) A. Heller Geophyte. Widespread and common in grassland, scrub, and woodland; especially abundant on recent burns. Boyd & Ross 9246, 21 Mar 1997.


**AMARYLLIDACEAE**


**ARECACEAE**


**CYPERACEAE**


**Carex schottii** Dewey Perennial herb. Scarce, documented by an early collection from south end of Bouquet Canyon. Clokey s.n., 13 Mar 1930.

**Carex senta** Boott Perennial herb. Scarce along stream, lower Ruby Canyon. Boyd & Wall 8787, 16 May 1996.


**Eleocharis macrostachya** Britton Perennial herb. Local, bed of vernal pool in Plum Canyon, and about cattle ponds in Grasshopper Canyon. Columbus et al. 2690, 5 Jun 1996.

**Eleocharis parishii** Britton Perennial herb. Widespread and common, moist soil along streams and about seeps. Boyd & Wall 8788, 16 May 1996.


Hyacinthaceae


Iridaceae


Juncaceae

*Juncus acutus* L. ssp. Leopoldii (Parl.) Snogerup Perennial herb. Infrequent along Castaic Creek upstream from confluence with Fish Creek; locally common in Grasshopper Canyon. *Boyd et al. 8920, 11 Jul 1996.*


*Juncus bupnionis* L. var. bupnionis Annual. Widespread and common in moist soil along streams, sumpal pools, margins of lakes, ponds, and reservoirs, and vernally moist swales. *Ross & Boyd 7241, 23 May 1993.*

*Juncus macrophyllus* Caville Perennial herb. Widespread and locally common, moist soil along streams and about seeps. *Ewan 3425, 22 Oct 1930.*


Lemnaceae


Liliaceae

*Calochortus clavatus* S. Watson var. clavatus Geophyte. Widespread and locally common in open scrub and especially on recent burns. More or less freely grading into var. gracilis. *Framp­ton 17255, 31 May 1952.*

*Calochortus clavatus* S. Watson var. gracilis Owenby Geophyte. Widespread, but only infrequently common locally in open scrub and especially on recent burns. More or less freely grading into var. clavatus. *Boyd & Raz 9710, 6 May 1997.*

*Calochortus invenustus* Greene Geophyte. Occasionally to locally common, openings in scrub on sedimentary substrates, western edge of the range. *Boyd & Wall 8768, 16 May 1996.*


*Calochortus splendidus* Douglas Geophyte. Scarce, documented by early collections from the southwestern quarter of the range. *Tem­pion, Clokey, & Clokey s.n., 13 May 1930.*

*Calochortus venustus* Douglas Geophyte. Widespread and common in grassland and openings in scrub and woodland in the northern half of the range. *Griesel & Miller s.n., 2 Jul 1963.*


Orchidaceae


Poaceae


*Agrostis exarata* Trif. Perennial herb. Widespread, but generally...


*ARISTIDA PURPUREA* Nutt. var. *PARISHII* (Hitchc.) Allred Perennial herb. Scarce, documented by early collection from near Sauquis. Dasy s.n., 20 Jan 1901.


*AVENA FATAU* L. Annual. Widespread and common in grassland, xeric openings in scrub and woodland, and ruderal situations. Boyd, Raz, & Ross 9487, 1 Apr 1997.


*BROMUS DIANDRUS* Roth Annual. Widespread and locally common, grassland, openings and understory of scrub and woodland, and especially disturbed ruderal situations. Wheeler 9311, 8 May 1967.


*BROMUS MADRETTESI* L. Annual. Scarce, documented from a few scattered sites and associated with disturbed situations. Wheeler 9126, 8 May 1967.


*BROMUS RUBENS* L. Annual. Widespread and common, grassland, openings and understory of scrub and woodland, and especially disturbed ruderal situations. Wolf 1602, 29 Mar 1928.


*CRYPTIS SCHODENOIDES* (L.) Lam. Annual. Locally common on drying mud at margins of lakes, sag ponds, and reservoirs in the northern half of the range; also documented from damped soil along Ruby Creek, near confluence with Elizabeth Lake Canyon. Raven 16750, 24 Sep 1961.


*ELYMUS CONDENSATUS* C. Presl Perennial herb. Widespread and locally common on mesic exposures in scrub and woodland, silvial benches, and about seeps. Ross, Mistretta, & Quicí 3983, 28 Jun 1990.


*ELYMUS TRIFOLIODES* Buckley Perennial herb. Local in wetlands about Knapp Ranch, upper Cienega Canyon, along stream in Bouquet Canyon, and in Grasshopper Canyon; also documented by an early collection from Acton. Boyd & Raz 9895, 8 Oct 1996.

*ERAGROSTIS MEXICANA* (Hornem.) Link ssp. VRESCIENSIS (J. Presl) Koch & Sanchez Annual. Scarce in moist soil along stream, Ruby Canyon at confluence with Elizabeth Lake Canyon; also documented from ruderal situation in Newhall. Raz & Boyd 007, 23 Oct 1996.

*ERAGROSTIS PECTINACEA* (Michx.) Nees var. PECTINACEA Annual. Uncommon in moist soil at widely scattered sites including Ruby Canyon at confluence with Elizabeth Lake Canyon, about margin of Bouquet Reservoir, near Agua Dulce, and in the Antelope Valley at the northeastern corner of the range. Raven 16752, 24 Sep 1961.


*LEPTOCILIO FASCICULARIS* (Lam.) A. Gray Perennial herb. Scarce on moist soil along stream in Ruby Canyon at confluence with Elizabeth Lake Canyon; also documented from east end of Bouquet Reservoir. *Raz & Boyd 038, 23 Oct 1996.


*MELIENBERGIA ASPERIFOLIA* (Nees & Meyen) Parodi Perennial herb. Occasionally to locally common in moist alkaline areas, drainages on the western edge of the range. *Boyd, Mistretta, & Soza 8836, 12 Jun 1996.


*ORCUTTA CALIFORNICA* Vasey Annual. Locally common in vernal pools on Cruzan Mesa and in Plum Canyon. These appear to be the only extant populations in Los Angeles County, and Cruzan Mesa represents the northern-most known station for this species. *Columbus et al. 2687, 5 Jun 1996.


*PASPALUM DILATATUM* Poir. Perennial herb. Locally common in shallow water along Castaic Creek near confluence of Fish Creek. *Boyd et al. 8918B, 11 Jul 1996.


*POLYPOGON MARITIMUS* Wild. Annual. Scarce in dry bed of Fish Creek, just upstream from confluence with Castaic Creek. *Boyd & Raz 9737B, 6 May 1997.


*SETARIA VIRIDIS* (L.) Beauv. Annual. Scarce in dry bed of Fish Creek at confluence with Castaic Creek, and near Agua Dulce. *Boyd & Raz 9741, 6 May 1997.


*STIPA CORONATA* Thurb. var. DEPAUPERATA (M. E. Jones) A. Hitchc.


**STIPA LEPIDA** A. Hitch. Perennial herb. Widespread and common in grassland, openings in scrub and woodland, and especially on recent burns. Boyd, Raz, & Ross 9478, 1 Apr 1997.


**VULPIA MICROSTACHYS** (Nutt.) Benth. var. CILIATA (Beal) Lonard & Gould Annual. Widespread and locally common in grassland and openings in scrub and woodland. Often growing in mixed populations with one or more other vars. of V. microstachys. Ross 8391, 26 Apr 1995.

**VULPIA MICROSTACHYS** (Nutt.) Benth. var. CONIFUSA (Piper) Lonard & Gould Annual. Widespread and locally common in grassland and openings in scrub and woodland. Often growing in mixed populations with one or more other vars. of V. microstachys. Boyd & Raz 9648A, 1 May 1997.

**VULPIA MICROSTACHYS** (Nutt.) Benth. var. MICROSTACHYS Annual. Widespread, occasional in grassland and openings in scrub and woodland. Often growing in mixed populations with one or more other vars. of V. microstachys. Boyd & Raz 9806, 20 May 1997.

**VULPIA MICROSTACHYS** (Nutt.) Benth. var. PAllIFLORA (Beal) Lonard & Gould Annual. Widespread and locally common in grassland and openings in scrub and woodland. Often growing in mixed populations with one or more other vars. of V. microstachys. Ross & Boyd 7798A, 11 May 1994.


**VULPIA OCTOFLORA** (Flower) Rydb. var. HERTELLA (Piper) Henrad Annual. Locally common on open, sandy alluvial benches in Soledad Canyon Wash near Acton and in Plum Canyon. Ross, Boyd, & Amseth 4955B. Within the range this taxon was always found growing in mixed populations with var. octoflora. An interesting form with the lowest lemma of each spikelet glabrous and the others pubescent was encountered in a mixed population in Plum Canyon. Boyd et al. 10117C, 24 Mar 1998.

**VULPIA OCTOFLORA** (Flower) Rydb. var. OCTOFLORA Annual. Widespread, occasional in grassland and openings in scrub and woodland. Ross, Boyd, & Amseth 4955A.

**POTAMOGETONACEAE**


**TYPHACEAE**


**ZANNICHELLIAEACEAE**


**ADDENDUM—EXCLUDED TAXA**

Although voucher specimens suggest they were collected within the boundaries of the Liebre Mountains study area, I have excluded several taxa from the flora. In all instances, the locality information on the specimen is sufficiently vague, and the characteristic habitat of the taxa involved sufficiently different from that inferred by the purported collection station, the veracity of the records is in question. References to these excluded taxa is provided here as an addendum to the annotated catalogue so their status may be re-examined should the taxa be encountered during future floristic work in the range.

**CALOCHORTUS ALBUS** Dougl. (Liliaceae). Geophyte. Putatively collected from "wooded slopes and canyons, Mohave Desert". Kusche s.n., May 1922. Although the location is vague, Kusche apparently included the adjacent mountains in his concept of the Mojave Desert. Therefore the collection could have come from the Liebre Mountains or perhaps the Tehachapi, Southern Sierra Nevada, or even San Gabriel mountains.

**CLEANTHUS MEGACARPUS** Nutt. var. MEGACARPUS (Rhamnaceae). Large Shrub. Putatively collected in "Bouquet Canyon, Sierra Pelona Mts." Kline s.n., May 1923. More likely this was taken in the Santa Monica Mountains.

**COLEGyne RAMOSISSIMA** Torr. (Rosaceae). Small shrub. Putatively collected in Bouquet Canyon. Hutchinson s.n., May 1921. This taxon is not otherwise known from Los Angeles County desert areas and more likely was collected in the Southern Sierra Nevada Mountains, or elsewhere on the Mojave Desert in a trip which included travel through Bouquet Canyon.

**COLLIINSIA TORREYI** A. Gray (Scrophulariaceae). Annual. Putatively collected along the Ridge Route. deforest s.n., Jun 1931. Although originally the name "Ridge Route" was restricted to that portion of the original north-south highway between Castaic and Sandberg, it was later applied to newer highways running over Tehachapi pass. This specimen may actually have been collected in the Tehachapi Mountains, or in the Frazier Park area of Mount Pinos, or even further north in the Sierra Nevada on a trip which passed over Tehachapi Pass via the "Ridge Route".

**CORDYLANTHUS NEVADENSIS** A. Gray (Scrophulariaceae). Annual. Putatively collected at Acton. Hasse s.n., Aug. 1893. This taxon is typically found at higher elevations and was likely collected in the San Gabriel Mountains south of Acton.

**DODECATHEON JEFFREYI** Moore (Primulaceae). Geophyte. Putatively collected along the Ridge Route. deforest s.n., Jun 1931. See discussion under Collinssia torreyi above.

**LOTUS NEVADENSIS** (S. Wats.) Greene var. NEVADENSIS (Fabaceae). Perennial herb. Putatively collected along the Ridge Route. deforest s.n., Jun 1931. See discussion under Collinssia torreyi above.

**STREPTANTHUS TORTUOSUS** Kell. (Brassicaceae). Annual to suffrutescent perennial. Putatively collected along the Ridge Route. deforest s.n., Jun 1931. See discussion under Collinssia torreyi above.
This work is dedicated to Timothy S. Ross, a peerless field botanist, and my respected colleague and friend. It was Tim who first articulated a need to document the flora of the Liebre Mountains when, during the spring and summer of 1990, we had the opportunity to work in the range as part of a broader program of botanical studies on the Angeles National Forest, work coordinated by Orlando Mistrutta of Rancho Santa Ana Botanic Garden and William J. Brown, Jr. of the Angeles National Forest. Tim provided inspiration and leadership in early years of this project, and his collections form the backbone of the data recorded here. When circumstances prevented Tim from continuing an active involvement in the study, I forged on ahead with the thought that he would remain a co-author. In discussions with Tim shortly before I completed this manuscript and he left southern California to reside in western Washington, he made it clear that it was his wish I be listed as the sole author. Although I have honored his wishes, and takes full responsibility for any errors of omission or commission, Tim will remain in my mind a co-author in this work.

My thanks go out to the numerous people who have assisted with fieldwork and other tasks associated with the study, and in particular Orlando Mistrutta, William J. Brown, Jr., Lauren Raz, David Bramlet, and Scott White. Finally, I thank my wife Carol for having the patience to put up with me during all the seasons of fieldwork spent in the Liebre Mountains backcountry.

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LITERATURE CITED


---, AND A. C. SANDERS. Noteworthy collection of Asclepias subula (Asclepiadaceae), Calycoseris parryi (Asteraceae), Mentzelia involucrata sp. mazalantu (Loasaceae), Navarretia gos-salis (Polonmniaceae), Orcuttia californica (Peaaceae), Sibara filifolia (Brassicaceae), and Sibara virginica (Brassicaceae) from California. Madroño (in press).

CITED

Tiquilia pliaca (Torr.) A. Richardson (Boraginaceae). Perennial herb. Putatively collected along the Ridge Route. deForest s.n., Jun 1921. See discussion under Collinsia toreyi above regarding use of the name "Ridge Route". This specimen is almost certainly from somewhere else on the Mojave Desert in association with sandy soils.

Zigadenus brevibracteatus (M. E. Jones) H. M. Hali (Melanthiaceae). Geophyte. Putatively collected from "deep soil on brushy hillsides, Mohave Desert". Kuske s.n., May 1922. See discussion under Colchicnthus albus. This specimen and the following are mounted on the same sheet (RSA 378417).

Zigadenus fremontii (Torr.) S. Wats. (Melanthiaceae). Geophyte. Putatively collected from "deep soil on brushy hillsides, Mohave Desert". Kuske s.n., May 1922.


---, AND A. C. SANDERS. Noteworthy collection of Asclepias subula (Asclepiadaceae), Calycoseris parryi (Asteraceae), Mentzelia involucrata sp. mazalantu (Loasaceae), Navarretia gos-salis (Polonmniaceae), Orcuttia californica (Peaaceae), Sibara filifolia (Brassicaceae), and Sibara virginica (Brassicaceae) from California. Madroño (in press).


---. 1985b. Flora of the Mount Pinos Region. Summaries of
major plant communities and annotated checklist of the vascular plants. Arcadia, California. 16 p.


PEIRSON, F. W. 1935 Trees and shrubs of the San Gabriel Range, Pasadena City Schools, Pasadena, California. 31 p.


