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## A description of vascular plant species from an area in the central Sierra Nevada foothills of California

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A DESCRIPTION OF VASCULAR PLANT SPECIES  
FROM AN AREA IN THE CENTRAL SIERRA  
NEVADA FOOTHILLS OF CALIFORNIA

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A Thesis presented to the  
Faculty of the Graduate School  
University of the Pacific

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

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By  
Thomas Carter Hensel  
December 1971

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## LIST OF ILLUSTRATIONS

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Figure 2- Topographical map of the study area.

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Figure 4



Figure 5



Figure 6



Figure 7

## INTRODUCTION

Much work has been done on the remarkably diverse flora of California but few specific studies of the foothills of the Central Sierra Nevada Range have been undertaken. One such area is Calaveras County, a region rich in the early history of California.

The site chosen for this study ranges from approximately 2350 to 2700 feet in elevation. It is well defined by survey and accessible at all times of the year. The primary objective of the study was to determine what vascular plant species occur naturally in the area. This was accomplished by extensive collections made from April 1970 to July 1971. In addition, recommendations are made to introduce various species that are normally native to the area and to eradicate the noxious species. This will enhance the area for future use as a University of the Pacific field site.



## DESCRIPTION OF THE STUDY AREA

### Location

The study area comprises 40 acres in the Sierra Nevada foothills of Calaveras County. The property designation according to the United States Geological Survey is T5N, R13E, E 1/2, N.E. 1/4, Sec.10. The area may be reached from the University of the Pacific by driving northeast on Highway 12 to San Andreas and continuing along Mountain Ranch Road toward Railroad Flat; 2.8 miles north of Jesus Maria Road is a dirt road to the west which leads to the area. (Fig.1)

### Topography

The elevation ranges between 2,350 and 2,700 feet (Fig.2). The area is drained by Esperanza Creek which flows throughout the year. The property is delimited by hills on the north, east and west; which form a horseshoe-shaped ridge around an upper central meadow. Toward the southwest corner of the property is a steep, narrow canyon which leads to a second meadow at lower elevation. Here, Esperanza Creek widens and the land abruptly levels. The shaded lower meadow is practically level and forms the major portion of the southern border of the property. The slopes of the hills are gradual

with one exception; the eastern bank of Esperanza Creek has a very steep angle that makes it difficult to negotiate.

### Climate

The closest official rainfall reading is taken at the West Point Station located 4.8 miles to the northeast. The average rainfall for the past five years is 46.91 inches ranging from a low of 29.26 inches in 1967-68 to a high of 58.35 inches in 1966 to 1967. Almost all rain falls from November 1 - June 1.

The hot dry summer months have daily temperatures of 90°F and above whereas the winter nights reach freezing and below. This climatic cycle is extremely rare, in fact it is different from all those east of the Sierra Nevada Range in North America. (Johnston, 1970)

### Habitat Types

The area can best be described as a Foothill Woodland which gradates to a Yellow Pine Forest. This property, although comprising only 40 acres, contains six habitats which are distinct enough to warrant separation.

The upper meadow is a grassland composed primarily of Bromus rigidus, Poa pratensis, Holcus lanatus, and Avena fatua. Several trees of Juglans hindsii, probably planted by early settlers for use as shade trees, comprise the only woody species. The vegetation on the lower portion of the hills bordering the grassland is composed of Arctostaphylos mariposa and Ceanothus cuneatus which form a chaparral

community. Higher up on these ridges is a dense coniferous forest that is mostly composed of Pinus ponderosa with several scattered Pinus lambertiana. The canyon offers a dense oak-mixed evergreen forest with little ground cover. Several species of Quercus are in this area along with Pseudotsuga menziesii, Libocedrus decurrens and Pinus ponderosa. The stream bed, its tributaries, and immediate banks afford a moist shade environment for Equisetum hymale var. robustum, Pteridium aquilinum var. pubescens, Carex eurycarpa, Datisca glomerata, and Montia perfoliata. The final area is the steep, densely shaded eastern bank of Esperanza Creek. Rhus diversiloba forms a dense cover throughout, also commonly found are Holodiscus discolor, Alnus tenuifolia, Corylus cornuta var. californica and many other shade loving species that were collected only in this habitat.

The winter aspect throughout the property is very sterile. Frost and ice cover the ground and remain for weeks at a time, though only a small amount of snow falls during the winter. The predominant plants are mosses, fungi, lichens, evergreen conifers, and live oaks; along with ferns and dormant woody perennials.

## MATERIALS AND METHODS

Collection trips were made between April, 1970 and June, 1971. All trips were one day long with approximately one visit every ten days during the peak blooming season. Although no flowers were observed between November 1 and February 1, periodic trips were made every three weeks to check the winter conditions of the land.

Plants were dug or portions removed when large size precluded collecting the whole specimen. These were labeled as to location, date collected, relative abundance, and other possible pertinent information. They were placed in a plant press to be dried and later identified and described. The description, in most cases, represents the average of the collected specimens; while the size ranges includes those observed in the field.

## HISTORY OF BOTANICAL EXPLORATION IN CENTRAL CALIFORNIA

Probably the first white man to pass through the area was Jedediah Smith the famous explorer and trapper. (Wood, 1948) He explored the San Joaquin Valley and the Sierran foothills in 1827 and returned to his base in Salt Lake City via Ebbetts Pass. He had no botanical training but does mention several tree species in his journal by name. In 1843 Richard Hinds, while on his mission of gathering vegetable specimens throughout the world, visited the California coast. He collected in and about the central valley and probably entered the foothills in his wanderings. (Hinds, 1843) The second expedition of John C. Fremont to California brought him across the Sierra Nevada several times and he made fairly extensive collections. In all, approximately 1400 species were collected on the expedition. However, more than half of these were destroyed or ruined by flood waters when they were traveling through Kansas. (Fremont, 1845) John Torrey along with Asa Gray recorded and identified Fremont's specimens and those collected by Fremont on his third expedition of 1845-47. There were new species of Kranmeria, Oenothera, Eriogonum, Pinus, Asclepias, and even his own genus Fremontia. Also at this time William Brackenridge, an explorer who primarily was interested in ferns was in the same area studying and collecting the

lower vascular plants. (Brackenridge, 1855)

Karl Hartweg was a German taxonomist sent to California by the London Horticultural Society to investigate the flora. In the Work "Plantae Hartwegianae" 81 species from his California collection were described as new. This journal is recognized as being one of the clearest and most concise of the time. It was written and published by George Bentham, the long time president of the Linnaean Society. (Bentham, 1839) Various numbers of the collection were published as new by Asa Gray and Sereno Watson.

Along with the gold rush and the settling of California, several important botanical journals were compiled. In 1876 "Botany" Volume I was published and became the first to include extensive California species. This was jointly compiled by William Brewer, Watson, and Gray. (Brewer, 1876) Volume II by Watson was completed in 1880. (Watson, 1880)

One of the first taxonomic guides for use exclusively in California was "A Popular California Flora" by Volney Rattan which was published in 1879. (Rattan, 1879) Several floras of California have been published since then, perhaps the most widely used in the early 1900's was "A Flora Of California" by Willis Linn Jepson, founder of the California Botanical Society. (Jepson, 1925) Another popular work that includes California is by LeRoy Abrams "Illustrated Flora of the Pacific States." (Abrams, 1960) The latter two were superseded by the current treatment of the California

flora compiled by Philip A. Munz and David D. Keck and  
simply called "A California Flora." (Munz, 1968)

## ANNOTATED LIST OF THE VASCULAR SPECIES

The following enumeration of the flora of the defined property in Calaveras County follows Dr. Munz's A California Flora as to arrangement of families, genera, and nomenclature. The major exception being that the Monocotyledoneae is placed before the Dicotyledoneae, hence following the more widely accepted practice. Species descriptions may vary from Munz if the collections warranted it. (eg. Munz may give the height of a species as 1-5 dm. but in our area it may vary from 2-3 dm.) Many other volumes were used to aid in identification but those consulted most frequently were Abram's Illustrated Flora of the Pacific States, and Jepson's A Manual of the Flowering Plants of California.

Locations given are those recorded by the author and in some cases represents only the most concentrated location of a species.

A set of specimens from this collection is being deposited at the herbarium of the University of the Pacific and in several instances represent new species for the herbarium.



DIVISION I: PTERIDOPHYTA

EQUISETACEAE

Equisetum

Equisetum hymale L. var. robustum (A. Br.). Horsetail.

Aerial stems persisting for several years, erect, rigid, usually simple, to 1m. high, 6-15 mm. thick, with 16-48 ridges, these very rough with a row of transverse bands of silica; sheaths somewhat longer than broad, cylindrical, ashy with black bands at both ends, teeth quite persistent; lvs. 3-keeled, the central keel rarely grooved; strobilus oval 1-2.5 cm. long, obtuse to sharply apiculate. -- West bank of Esperanza Creek. Collected in May.

PTERIDACEAE

Pteridium

Pteridium aquilinum (L.) Kuhn var. pubescens Unerw. Bracken Fern.

Rhizome perennial, lvs. annual, erect or ascending, 5-18 dm. tall; stipes straw-colored; blades 2-10 or more dm. long, usually 3 times pinnate in lower part; sorus continuous along lf-margin, born on the connecting vein, with a narrow, villous double indusium; annulus of ca. 13 thickened cells; spores tetrahedral or globose-tetrahedral, smooth. -- Mostly in shaded places throughout property. Collected in September and October.

## ASPIDIACEAE

Dryopteris

Dryopteris arguta (Kaulf.) Watt. Shield Fern.

Rhizomes stout, short-creeping, woody, with thin attenuate bright brown scales; fronds several, close, erect, 3-8 dm. tall; stipes stout, scaly, shorter than blades; blades lance-ovate to oblong, acuminate, 2.5-6 dm. long, 1-3 dm. broad, twice-pinnate; pinnules lance oblong, subcoriaceous, rounded-obtuse, serrate to incise, the teeth often spinelike; sori in 2 rows, large, close; indusia firm with a deep narrow sinus, the margins glandulose. -- Shaded east bank of Esperanza Creek in lower meadow. Collected in June.

## BLECHNACEAE

Woodwardia

Woodwardia fimbriata Sm. in Rees. Chain Fern.

Rhizome woody, the scales lance-attenuate, 1-3 cm. long, glossy, bright brown, entire; fronds several to many in a crown, firm, erect, 1-2 m. high, bipinnate, with entire to serrulate margins; stipes short, straw-colored from a brown base; blades 2-4 dm. wide, oblong, pinnate, narrow at base; pinnae 1-2.5 dm. long, deeply pinnatifid, the segms. lanceolate, spinulose-serrate, firm-herbaceous; sori borne on the outer horizontal veins of a continuous series of elongate areoles; indusium elongate, arched, 1.5-5 mm. long. -- Along upper banks of Esperanza Creek. Collected in October.

## DIVISION II: SPERMATOPHYTA

## CLASS I: GYMNOSPERMAE

## PINACEAE

PinusPinus lambertiana Dougl. Sugar Pine.

Evergreen tree 15-40 m. tall, the crown open and narrow when young, later flat-topped, the older branches well spaced, wide spreading; bark smooth, dark green when young, later deeply and irregularly divided into platelike ridges with loose reddish-brown scales; branchlets stout, pubescent when young; lvs. in 5's, slender, 7-10 cm. long, with several rows of stomates; male cones yellow, 8-10 mm. long; female cones cylindric, 25-45 cm. long, on stalks 5-8 cm. long, the scales often to 4 cm. wide, with thin tips and terminal scar-like umbos; seeds dark, ca. 9-12 mm. long, the wings twice as long. -- East slope at southern end of upper meadow. Collected in July.

PinusPinus ponderosa Dougl. ex P. & C. Lawson. Yellow Pine.

Tree to 50 m. high, the branches short, often pendulous, generally turned up at ends; bark on old trees 6-10 cm. thick, odor in furrows resinous; branchlets of season shining green, or of previous year brownish, lvs. glossy, yellow-green, in

clusters of 3, 12-20 cm. long, scabrous on margins; male cones 2-3 cm. long, in short dense clusters; female cones subterminal, the prickles short, protruding outward from the umbos, prickly when clasped; seeds ovoid, acute, 6-7 mm. long, dark purple, the wings 4-5 times as long, oblique at apex. -- Throughout area. Collected in October.

Pseudotsuga

Pseudotsuga menziesii (Mirb.) Franco. Douglas-Fir.

Tree to 40m. tall, with a narrow pyramidal crown, the slender crowded branches with long pendulous lateral branches; bark becoming deeply fissured; branchlets pubescent for 3-4 years, brownish; lvs. mostly 2-3 cm. long obtuse, dark yellow-green, male cone yellow, with red tinge; female cones pendent, with rounded slightly concave flexible scales and conspicuously exserted 3-parted bracts ca. 5 mm. wide; seeds ca. 6 mm. long, wings slightly more. -- Many locations but primarily along slopes of canyon. Collected in October.

CUPRESSACEAE

Libocedrus

Libocedrus decurrens Torr. Incense-cedar.

Tree to 30 m. tall, evergreen, aromatic, with a straight conical trunk from a broad base, the lower branches curved downward, the upper erect; crown conical; bark 1-2.5 cm. thick, cinnamon-brown, fibrous; branchlets flattened, often vertically placed; lvs. light green, scalelike, 3-10 long, decussate but alternately short and long, thus appearing in

whorls of 4; male cones yellow, 5-6 mm. long, female cones pendulous, oblong, 2-3 cm. long; scales oblong, imbricated; seeds 2 to each scale, 8-10 mm. long, winged. -- Along slopes of canyon. Collected in October.

CLASS II: ANGIOSPERMAE

SUBCLASS I: MONOCOTYLEDONEAE

LILIACEAE

Calochortus

Calochortus albus Dougl. ex Benth. Fairy Lantern.

Stem rather slender, erect, 3-8 dm. tall, occasionally branched; basal lf. 3-7 dm. long, 1-5 cm. wide; fls. white, globose to globose-campanulate, nodding; sepals ovate to lanceolate, glabrous, 1-1.5 cm. long; petals elliptic, or wider, ciliate, and with slender rose colored hairs above the gland, 2-2.5 cm. long, gland  $\frac{2}{3}$  as wide as petal, depressed, with several transverse fringed membranes; filis. dilated at base, 4-5 mm. long; another oblong, 4 mm. long; caps. oblong, 3-winged, nodding, 2.5-4.0 cm. long; seeds irregular, dark brown, reticulate. -- Shaded west bank of Esperanza Creek in lower meadow. May-June.

Calochortus clavatus Wats. Mariposa-Lily.

Stems coarse, zigzag, simple or branched, rarely bulbiferous, 4-10 dm. high; lower lvs. 1-2 dm. long, linear, the upper reduced; bracts 4-8 cm. long, dilated at base; fls. 1-6, subumbellate, erect, cup shaped, lemon-yellow, sometimes aging lavender, with a red-brown spot on each sepal, and transverse line on petals above the glands; sepals lance-ovate, acute, 2.5-3.5 cm. long; petals broadly cuneate-obovate, 3.5-4.5 cm. long; gland circular, deeply

impressed, surrounded by a fringed membrane, densely covered with short processes with branched fungoid-tips, with clavate hairs above the gland; fils. ca. 1 cm. long; anthers brownish, oblong, 8-10 mm. long; caps. lance-linear to lance-ovate, acuminate, 3-angled, 6-9 cm. long; seeds flattened. -- West slope above road leading to lower meadow. June-July.

Calochortus monophyllus (Lindl.) Lem. Yellow Star-Tulip.

Stems flexous, simple or branched, 1-2 dm. high; basal lf. 1-3 dm. long, 5-15 mm. wide; cauline lvs. 0-3, lanceolate to linear, much reduced; bracts paired, lanceolate to linear lanceolate, 2-6 cm. long; fls. deep yellow, occasionally with a red-brown spot on claw of each petal, open-campanulate, weakly erect; sepals lance-oblong, 15-20 mm. long, glabrous; petals narrow-obovate, acute to obtuse, clawed, fringed, densely bearded above gland with clavate hairs; gland transverse, arched upward, naked, bordered below by a fringed membrane and above by short processes; fils. dilated below, 4-5 mm. long; anthers apiculate, 3-4 mm. long, yellowish; caps. broadly elliptic, 3-winged, nodding, 12-20 mm. long; seeds irregular, dark brown, reticulate. -- Primarily on western slope of upper meadow and in the canyon toward the northern end. April-May, although it was collected several times as late as July.

Chlorogalum

Chlorogalum pomeridianum (D.C.) Kunth. Soap Plant.

Bulb 7-15 cm. long, heavily coated with persistent dark brown fibers of old coats; lvs. 3-7 dm. long, 6-25 mm. wide, with very wavy margins; stems glaucous, stout, 6-15 dm. tall, freely branched above; pedicels slender, 5-25 mm. long; perianth-segms. linear, white with green or purple midvein, 15-20 mm. long, twisted in bud, spreading and recurved at anthesis; stamens ca.  $\frac{2}{3}$  as long; anthers 3 mm. long; style 10-15 mm. long; caps. globose, short-stipitate, 5-7 mm. long.  
-- Throughout upper meadow. July.

Fritillaria

Fritillaria micrantha Heller. Brown Bells.

Bulb with few scales and numerous rice-grain bulblets; stem 5-10 dm. long, light green; lvs. of upper part of stem, in whorls of 3-4, linear to lance-linear, 7-15 cm. long, 4-10 mm. wide, fls. nodding, broadly campanulate, 4-10, greenish-yellow with purple; perianth-segms. 12-17 mm. long, 4-5 mm. wide, apically white-tufted; gland lance-oblong, on lower third of each segm.; stamens slightly less than half as long as segm., style 3-cleft  $\frac{1}{3}$  to  $\frac{1}{2}$  its length; caps. broadly winged, slightly wider than long. -- Upper portion of steep shaded slope on east bank of Esperanza Creek. May.

Lilium

Lilium pardalinum Kell. Leopard-Lily.



Bulbs branching-rhizomatous, 6-10 cm. long, scales usually 1-jointed, 1.5-3 cm. long; stems stout 1-2 m. high; lvs. linear to lanceolate, 1-2 dm. long, 5-20 mm. wide, in 3-4 whorls of 8-13 and some scattered, pale to dark green; fls. nodding, 1-few, yellowish-orange or some red, with maroon spots, the segms. recurved to the middle or below, 5-8 cm. long, 12-20 mm. wide, anthers 8-12 mm. long; caps. oblong, 3 cm. long. -- Along west bank of Esperanza Creek at southern edge of property. July.

### Smilacina

Smilacina racemose (L.) Desf. var. amplexicaulis (Nutt.)

Wats. False Solomon's-Seal.

Rootstocks stout 1-2 cm. in diam; stem erect, 3-9 dm. high, pubescent above; lvs. several, acute, clasping and sessile, broadest near middle, 10-20 cm. long, 4-10 cm. wide, pubescent beneath; peduncles naked, 4-8 cm. long; infl. paniculate 5-20 cm. long, many fld., pubescent; perianth-segms., 1-2 mm. long, stamens 1.5-3 mm. long; berry ca. 5 mm. long, mostly red or with small purple spots; seeds ca. 4 mm. long. -- Steep bank on east side of Esperanza Creek. May-June.

### Trillium

Trillium chloropetalum (Torr.) Howell var. angustipetalum (Torr.) Munz.

Stems stout, 3-5 dm. tall, one or more from thick rhizomes; lvs. in one whorl of 3, ovate-cordate, 12-15 cm.

long, ca. as wide, with short petioled base; fls. sessile, perfect, perianth segms. distinct; petals erect, linear, 8-11 cm. long, mostly 5-10 mm. wide, dark reddish-purple; sepals oblong-lanceolate, 5-6 cm. long, 1-1.5 cm. wide, spreading, green below, purple streaked above; stamens 6; filis short; anthers linear 15-20 mm. long, dark purple with pink margins; ovary 3-celled, with several ovules per cell; style 3; fr. a winged berry, purple, 2.5-3 cm. long. --

Shaded wooded slope on east bank of Esperanza Creek in lower meadow. April-May.

#### AMARYLLIDACEAE

##### Brodiaea

Brodiaea elegans Hoover. Harvest Brodiaea.

Scapes mostly 1-4 dm. tall; lvs. ca. same length, 3 mm. wide, largely withered at anthesis, pedicels 3-8 cm. long; perianth violet to deep blue-purple, 30-42 mm. long, the tube funnelform 1-2 cm. long; segms. 15-25 mm. long, ascending-recurved; staminodia erect 9-11 mm. long, distant from the stamens; filis. angular, 4-6 mm. long; anthers 7-10 mm. long; stipe shorter than the obovoid ovary; seeds 2-3 mm. long; stigma 3-lobed. -- West slope of upper meadow. May.

Brodiaea hyacinthina (Lindl.) Baker. White Brodiaea.

Scapes 3-7 dm. tall, smooth or scabrous; lvs. 1-4 dm. long, 5-20 mm. wide; pedicels 1-4 cm. long; perianth segms. white with green midvein, the tube bowl-shaped, 2-5 mm. long; segms. spreading, 7-12 mm. long; filis. dilated toward base,

2-4 mm. long; anthers 6, versatile, 1-2 mm. long, white to pale blue; stipe ca. half as long as ovary at anthesis; stigma not evidently lobed; seeds ca. 1.5 mm. long. --

East slope at the southern end of upper meadow. June.

Brodiaea lutea (Lindl.) Mort. var. scabra (Greene) Munz.

Golden Brodiaea.

Scapes 2-5 dm. tall, scabrous near base, lvs. 1-3 dm. long, 3-12 mm. wide; pedicels 1-5 cm. long, curved upward; perianth segments straw to yellow with dark midveins, the tube 4-6 mm. long; segms. spreading-deflexed, 10-13 mm. long; fils. broad, flat, apically forked, alternately 4 and 2.5 mm. long; anthers 3-4 mm. long, white to light yellow, borne between forks of fils., stigma entire; caps 6-8 mm. long, ovate; ovary-stipe shorter than body; seed 1.5 mm. long. -- West slope at southern end of lower meadow. May.

Brodiaea pulchella (Salisb.) Greene. Blue-Dicks.

Scapes 3-7 dm. high, smooth; lvs. 2-4 dm. long, 5-10 mm. wide; bracts rose, ovate-lanceolate; pedicels 2-6 mm. long; perianth segms. violet, ascending, 7-10 mm. long; tube violet, 4-8 mm. long, cylindro-campanulate; fils. opposite the outer segms, dilated, 2 mm. long, bearing anthers 2-3 mm. long, those opposite the inner segms. adnate but extending beyond the anthers as 2 lanceolate appendages, these anthers 3.5-4.5 mm. long; style 4-6 mm. long; caps. ovoid, 4-6 mm. long; sessile; seeds ca. 3 mm. long. -- Eastern periphery of upper meadow. June.

Brodiaea volubilis (Moriere) Baker. Twining Brodiaea.

Scapes 8-15 dm. long, contorted and twining over bushes;

lvs. 3-7 dm. long, 8-14 mm. wide; pedicels 2-5 mm. long, flexuous and spreading or drooping at anthesis, later curved upward; perianth segms. rose to pink, 5-7 mm. long, spreading at anthesis, later erect; perianth-tube inflated, 6 angled, 5-7 mm. long, equally wide; stamimodia white, narrow oblong, 2.5-3 mm. long, notched to bifid; fils. adnate, apically bearing 2 oblong, acute appendages which slightly exceed the anthers; anthers 3-4 mm. long; caps. subsessile, ovoid; seeds ca. 3 mm. long. -- West bank of Esperanza Creek. June-July.

## IRIDACEAE

### Iris

Iris hartwegii Baker. Iris.

Rhizome 4-6 cm. in diam.; lvs. few, 5-10 mm. wide, up to 5 dm. long, with reddish-purple pigment at their base; fl.-stem slender, simple 1-3 dm. tall, with 1-several sheathing lvs. free ca. 1/2 their length; fls. 1-2; spathe-bracts linear to lance-linear, usually divergent and as much as 6 cm. apart on the stem, herbaceous; the outer 6-12 mm. wide; 8-12 cm. long; pedicels 3-6 cm. long; ovary subcylindrical 15-20 mm. long; perianth tube 5-12 mm. long; sepals 4-7 cm. long, 1-2 cm. wide; petals narrowly oblanceolate, 3.5-6 cm. long, 4-10 mm. wide; fl. color pale yellow; style branches 1.6-3 cm. long; style crests obtusely rounded, 5-10 mm. long; anthers ca. 1.5 mm. long; caps, oblong-oval, 2-3 cm. long, rather abruptly tapered at both ends.

-- Slopes in upper meadow. May.

## JUNACEAE

### Juncus

Juncus effusus L. var. pacificus Fern. & Wieg. Rush.

Rootstock stout, profusely branched; stems in dense tufts, 6-15 dm. tall, 2-3.5 mm. in diam. at base, terete, stiff, faintly many striate; lf.-sheaths basal, beige to chocolate-brown, dull, 5-15 cm. long, the uppermost mostly 6-15 cm. long, emarginate at the top, with strongly converging veins, and edges overlapping nearly or quite to the summit, often with terminal filamentous blade-rudiment; bract of infl. 6-20 cm. long, infl. lax, 2.5-12 cm. long; perianth-segms. 2.5-3.5 mm. long, subequal, rather soft, pale greenish-brown, with pale brownish membranous margin; anthers 3, shorter than fils; caps obovoid, ca. as long as perianth, brownish, obtuse to somewhat retuse, slightly apiculate; seeds ellipsoid, reticulate in ca. 16 equal longitudinal rows. -- Southern end of upper meadow. July.

### Luzula

Luzula subsessilis (Wats.) Buch. Wood Rush.

Tufted, 1-3 dm. high; lvs. mostly basal, dull-green, loosely long ciliate, 7-15 cm. long, 3-7 mm. wide; infl. subcapitate; heads usually separate, rarely clustered globose to subcylindric; lowest bracts foliaceous, from shorter than to exceeding the infl.; bractlets lacerate-ciliate, brownish with hyaline margin, 3-6 mm. long;

anthers ca. as long as filaments; caps. greenish, much shorter than perianth; seeds brown, ca. 1.25 mm. long, the light caruncle well developed. -- East slope in upper meadow. April-May.

## CYPERACEAE

### Carex

#### Carex eurycarpa Holm.

Plants in dense clumps with short creeping rootstocks and stolons; culms 4-9 dm. tall, longer than the lvs.; blades flat, 2-3 mm. wide, the leaf-sheaths breaking and becoming filamentose; male spikelets usually 2, the terminal largest 3-5 cm. long; female spikelets often separate, usually androgynous, linear, 2.5-4.5 cm. long; lowest bract leaflike and longer than infl.; scales lanceolate, narrower than the perigynia and shorter; perigynia, obovate, 3 mm. long, finely ribbed dorsally and ventrally, granular, abruptly beaked, the beak 0.2-0.5 mm. long, entire. -- Small rocky outcrop in Esperanza Creek in lower meadow. April.

#### Carex tumulicola Mize.

Plants loosely caespitose, the stems and lvs. from somewhat prolonged rootstocks; culms erect or spreading, 2-8 dm. long, longer than the lvs.; blades 1.5-2.5 mm. wide, flat, or sometimes folded along the middle; spikelets several to numerous, the spike slender, 2-6 cm. long; female scales ca. the size of the perigynia and usually concealing them;

perigynia elliptic to ovate, 3.5-5 mm. long, nerved dorsally and ventrally, serrulate on the margin above the middle, stipitate, contracted into a serrulate beak, the beak bidentate, ca. 1/3 the length of the body. -- Roadside in upper meadow. May.

### Cyperus

Cyperus Strigosus L. Umbrella Sedge.

Perennial with swollen corms at the base of the culms; culms 1-6 dm. high, smooth; lvs. several, longer or shorter than culm, flat, scaberulous on margins and midrib; involucrel lvs. 3-several scaberulous; infl. umbellate, the rays unequal, to 20 cm. long, terminating in loose divaricate clusters of spikes; spikelets linear, flat, 5-20 mm. long, 1-2 mm. wide; rachis somewhat zigzag, winged at each node with a pair of wide hyaline members which clasp the ak.; scales oblong-lanceolate, acute, strongly several nerved, straw colored; stamens 3; style trifid; ak, triangular, linear-oblong, 1.5-2.5 mm. long, 0.5 mm. wide mucronate, purplish-brown. -- Primarily in upper meadow. June.

## GRAMINEAE

### Aira

Aira caryophyllea L. Hairgrass.

Delicate annual, culms 1-few, slender, erect, 1-3 dm. tall; panicle open, the spikelets tan, shining, 3 mm. long, clustered toward ends of spreading capillary branches;

spikelet 2-fld., disarticulating above the glumes, the rachilla not prolonged; glumes boat-shaped, subequal, membranaceous, acute; lemmas firm, rounded on back, tapering into 2 slender teeth, both with geniculate awn from below middle, ca. 4 mm. long. -- Throughout property. May.

### Anthoxanthum

Anthoxanthum odoratum L. Sweet Vernal Grass.

Tufted, erect, perennial, 3-6 dm. tall; blades flat, 3-7 mm. wide; panicle brownish-yellow, long exserted, 2-6 cm. long; spikelets 8-10 mm. long; glumes unequal, scabrous, acute; 1st sterile lemma short-awned below apex, 2nd with a twisted geniculate awn from near base; fertile lemma awnless, ca. 2 mm. long, tan, smooth, shining; palea 1-nerved, rounded on back, enclosed in lemma. -- Occasionally, throughout property. June.

### Avena

Avena fatua L. Wild Oat.

Culms stout, 3-7 dm. tall; blades 4-10 mm. wide; panicle loose, open, with horizontal branches; spikelets usually 3-fld.; florets readily falling from glumes; glumes subequal, several-nerved, ca. 2.5 cm. long, the rachilla and lower part of lemma with long stiff white to brownish hairs; lemmas nerved above, ca. 2 cm. long, with acuminate teeth; awn stout, geniculate, twisted below, 3-4 cm. long. -- Throughout property. April-May.



BrizaBriza minor L. Quaking Grass.

Annual, 1-3 dm. high, ligule of upper lf. ca. 5 mm. long, acute; blade 3-10 mm. wide, panicle erect, its slender branches spreading, spikelets pendent, cordate, 4-6 fld., green, white, and plum colored, 3-4 mm. long, 4-5 mm. wide at base; glumes subequal, ca. 3 mm. long; lemmas gibbous at base, papery. -- West side of Esperanza Creek in lower meadow. May.

BromusBromus commutatus Schrad. Hairy Chess.

Annual, the culms 3-6 dm. tall; sheaths retrorse-pilose; lf. blade 2-4 mm. wide, pubescent; panicle pyramidal, nodding, 7-15 cm. long; spikelet 15-20 mm. long, 5-8 fld., lance-ovoid; glumes 8-11 mm. long, subequal, the upper lanceolate; lemmas 7-nerved, 7-10 mm. long, elliptic, obtuse, with an obtuse angle on the margin just above the middle; awn straight, 4-6 mm. long, from between bifid teeth; the florets imbricate in fr. leaving no spaces at their bases. -- Throughout property. April.

Bromus rigidus Roth. Ripgut Grass.

Annual, the culms 3-7 dm. tall; lf. sheaths and blades pilose, the latter 3-10 mm. wide; panicle open or somewhat compact, few-fld., 6-12 cm. long, the lower branches mostly 1-2 cm. long; spikelets 3-4 cm. long, 5-7 fld., glumes smooth, acuminate, the 1st 1-nerved, 16-20 mm. long, the 2nd 3-nerved, 25-30 mm. long; lemmas 5-nerved, 25-30 mm. long,

scabrous or puberulent, 2-toothed, from between bifid teeth of lemma, the teeth 3-4 mm. long; awns stout 3-5 cm. long, scabrous. -- Throughout property. April-May.

### Cenchrus

Cenchrus pauciflorus Benth. Burgrass.

Low branching annuals, sometimes forming large mats, with simple racemes of spiny burs terminating the culms and branches; culms 2-6 dm. long; lf-blades 2-7 mm. wide; raceme 2-5 cm. long, the burs somewhat crowded, mostly 4-6 mm. long and wide, ciliate pubescence; spines many, spreading or reflexed, flat, some of upper 8-10 mm. long, villous at the base; glumes shorter than the lemma. -- West side of Esperanza Creek in lower meadow. June.

### Elymus

Elymus glaucus Buckl. Rye Grass.

Culms tufted, 6-15 dm. tall; lf.-sheaths smooth or scabrous; blades flat, mostly 1-2 cm. wide, scabrous; spike long-exserted, 0.5-2 dm. long; spikelets 10-14 mm. long; glumes ca. as long, equal, rigid, strongly 3-5 nerved, acuminate; lemmas awned, the awn 1-2 times the body length, erect to spreading. -- Throughout the property. June-July.

### Holcus

Holcus lanatus L. Velvet Grass.

Perennials with flat lf-blades and contracted panicles, culms, erect, velvety-pubescent, 3-10 dm. tall; blades 5-10 mm. wide; panicles 8-15 cm. long, grayish, tinged with purple;

spikelets 4 mm. long; glumes villous, the 2nd broader than the first, 3 nerved, 2nd 1-nerved; lemmas smooth, shining, the 1st awnless, the 2nd with a hooked awn; 1st floret perfect, 2nd. male. -- Throughout property. May-June.

### Panicum

Panicum pacificum Hitchc. & Chase. Panic Grass.

Vernal form light green, tufted, spreading or ascending, 3-6 dm. tall; nodes pilose; sheaths papillose-pilose; blades erect or ascending, 5-10 cm. long, 5-8 mm. wide, pilose on upper surface; panicles 5-10 mm. long; spikelets open panicles, 2 mm. long, obtuse, pubescent; 1st glume 1/4 to 1/3 the length of the spikelet, truncate; autumnal phase prostrate-spreading. -- Lower meadow on the west side of Esperanza Creek. July.

### Poa

Poa bulbosa L. Bluegrass.

Tufted, 2-5 dm. high, the culms somewhat bulbous at the base; sheaths smooth, lf-blade of innovations usually folded, of culms flat or folded, 3-5 mm. wide, smooth; ligule 2-4 mm. long; panicle narrow, somewhat compressed, up to 10 cm. long; branches ascending and scabrous, spikelets mostly proliferous, the 4-6 florets are converted into bulblets with dark purple base and much prolonged foliaceous tip to the lemma, unaltered lemmas 3 mm. long, sericeous on keel and marginal nerves. -- Near small tributary of Esperanza Creek on west bank in lower meadow. Collected in May.

Poa pratensis L. Kentucky Bluegrass.

Rhizomatous perennial, culms tufted, 3-10 dm. high; lf. blades green, flat or folded, mostly 4-5 mm. wide, the basal up to 30 cm. long, smooth, ligule ca. 1 mm. long, truncate; panicle open, pyramidal 7-15 cm. long; spikelets 3-5 fld., 4-6 mm. long, green and purplish glumes scabrous on keel; lemmas 2-3 mm. long, mostly acute with cobwebby hairs at base, sericeous on keel and marginal nerves, glabrous between. -- Throughout property, more abundant in the lower meadow. May-June.

## SUBCLASS II

## DICOTYLEDONAE

## RANUNCULACEAE

Aquilegia formosa Fisch. in DC. var. truncata (F. & M.) Baker. Columbine.

Stems mostly 5-10 cm. high, glaucous, glabrous below, openly branched and glandular-pubescent above; basal lvs., biternate, thin, green above, glaucous below, glabrous to pubescent; petioles 1-2 dm. long; lfts. cuneate-obovate, mostly 2-4 cm. long, cleft to middle, then variously lobed and with rounded teeth; lvs. reduced up the stems; fls. pendent, slightly pubescent; sepals red, ovate-lanceolate, wide spreading, 10-15 mm. long, 5-8 mm. wide, acute, laminae yellow, rounded to truncate, 1-3 mm. long, spurs red 1-2 cm. long; stamens, 10-15 mm. long, the styles 10-15 mm. long; seeds ca. 2 mm. long. -- West bank of Esperanza Creek

at southern border of lower meadow. July.

Delphinium

Delphinium gracilentum Greene. Larkspur.

Roots shallow, tuberiform; stem slender, often procumbent, 3-5 dm. long, simple, glabrous except for glandular-pubescent infl; lvs. few, mostly basal, thin, 5-fid, 4-7 cm. wide, the primary divisions with oblong, obtuse ultimate lobes, pubescent especially below, petioles 1-2 dm. long; racemes lax, narrow, 10-12 fld., pedicels filiform; sepals dark deep blue to purple, ovate, 6-10 mm. long, subglabrous; spur straightish, 10-12 mm. long; upper petals white, narrow-oblique; lower petals blue, round, bifid, with an open sinus 2 mm. deep; follicles glabrous, curved, 10-12 mm. long; seeds pyramidal, 2 mm. long, muriculate, black, the truncate summit with white membranous rim. -- Shaded west bank of Esperanza Creek. May.

Delphinium gracilentum Greene. F. versicolor Ewan. Larkspur.

Fls. pale pink and slightly smaller. Found with the typical variety and doubtfully separate from it. May.

Delphinium hanseni (Greene) Greene. Larkspur.

Taproot short, slender; stems 5-9 dm. high, greenish, appressed-pubescent, somewhat pilose at base; lvs. withering somewhat early, largely basal, the lower rhombic, hairy, 4-7 cm. wide, palmatifid, the upper smaller, palmatisect into narrow divisions; petioles ascending, ca. twice as long as blade; raceme fairly compact, many-fld., pedicels suberect, 1-2 cm. long; sepals dark purple to blue, oblong, obtuse,

6-9 mm. long, pubescent to ciliate; spur slender, curving 8-11 mm. long; upper petals pale, narrow, striped with lavender; lower petals darker, rounded, bearded, the sinus open, 2-3 mm. deep; follicles erect, 10-14 mm. long, hairy; seeds obpyramidal, white, scaly-echinate. -- Upper meadow. May-June.

### Isopyrum

#### Isopyrum occidentale H. & A.

Stems 1-several, slender 1-3 dm. high, branched above; basal lf. long-petioled, 5-10 cm. long, with cuneate, 2-3 lobed lfts. 1-2 cm. long, glaucous beneath; obovate, 7-9 mm. long; petals 0, stamens ca. 5 mm. long; follicles 8-10 mm. long, compressed, sessile; seeds several. -- Shaded east bank of Esperanza Creek in lower meadow. May.

### Ranunculus

#### Ranunculus occidentalis Nutt. var. Eisenii (Kell.) Gray.

Buttercup.

Perennial, with slender roots; stems erect, 3-7 dm. high, 2-4 mm. thick, branched above, mostly hirsute; basal lvs. fan-shaped in outline, 2-4 cm. wide, 3-parted, the lobes cuneate, again lobed, strigose, the ultimate teeth acute; petioles mostly 3-8 cm. long, hirsute; pedicels 3-12 cm. long; sepals 5, greenish-yellow, reflexed at the middle, 4-8 mm. long, promptly deciduous; petals mostly 5, yellow elliptic, 7-12 mm. long, 4-8 mm. wide; stamens 25-50; aks. mostly 8-15, in a hemispheric cluster, discoid, 2-3.5 mm.

long, glabrous, the beak 0.5-1 mm. long; receptacle glabrous.

-- Throughout property. March-April.

## MALVACEAE

### Sidalcea

Sidalcea malvaeflora (DC.) Gray ex. Benth. ssp. asprella  
(Greene) C. L. Hitchc. Checker.

Perennial with rather widely spreading rootstocks from heavy root; stems 3-10 dm. tall, rough-pubescent with stellate and simple hairs; lvs. 3-6 cm. broad, often fleshy, usually simply hirsute beneath and stellate above, long petioled, the basal from rounded to reniform, shallowly 7-9 lobed and coarsely crenate, the cauline similar to more deeply lobed, the floral often divided to base; racemes simple, elongate and open, pedicels 3-20 mm. long; calyx 9-14 mm. long; finely appressed-stellate and with long coarse 2-4 rayed hairs; petals 1-2.5 cm. long, rose-pink, usually white-veined; carpels 3-4 mm. long, sparsely glandular-puberulent, short-beaked. -- Primarily along slopes of upper meadow. May-June.

## GERANIACEAE

### Erodium

Erodium botrys (Cav.) Bertol. Storksbill.

Stems semiprostrate to suberect, 1-7 dm. long, retrocurved-hirsute; lf.-blades ovate to oblong-ovate, 3-8 cm. long, deeply lobed to pinnatifid, setose-pilose on veins

and margins; stipules ovate; peduncles 2-15 cm. long, glandular-pubescent; pedicels 1-4, 1.5-3 cm. long; sepals 7-9 mm. long, 12-15 mm. in fr., with prominent reddish mucro; petals ca. 1.5 cm. long, lavender; style column 9-14 cm. long, the spirally coiled part with numerous turns; carpel-bodies 8-10 mm. long; with short stiff spreading hairs, the apex subglabrous and its concavities surrounded by 2 folds. -- Throughout property. April.

Erodium cicutarium (L.) L'Her. Storksbill.

Stems slender, decumbent, 1-4 dm. long, glandular-pubescent; lvs. commonly 3-8 cm. long, pinnate, the lfts. incisely pinnatifid; stipules lanceolate; peduncles 5-12 cm. long, glandular-pubescent, slender, pedicels 2-10, 1-2 cm. long; sepals 3-5 mm. long, short-mucronate and with 1-2 white bristles; petals rose-lavender, 5-7 mm. long, ciliate at base, darkly 2-spotted; style-column 2-4 cm. long, the coiled parts with several turns; carpel bodies 4-5 mm. long, stiff-pubescent, the apical concavities glabrous, circular, without a subtending fold. -- Throughout property.

March-April.

Erodium moschatum (L.) L'Her. Storksbill.

Stems rather fleshy, decumbent to ascending, 1-3 dm. long, glandular pubescent; lvs. 5-20 cm. long, glandular-pubescent; pedicels 5-12, pubescent and with subappressed hairs, 5-15 mm. long; sepals 6-7 mm. long, mucronate, mostly without terminal setae; petals, 5-7 mm. long, rose-violet, fragile; style-column 2-4 cm. long, the coiled parts with several turns; carpel-bodies 4-5 mm. long, stiff pubescent,



the apical concavities glabrous, oblong, subtended by a concentric fold. -- Throughout property. April.

#### LIMNANTHACEAE

##### Limnanthes

Limnanthes montana Jeps. Meadow-Foam.

Stems slender, usually simple, ascending, 1-2 dm. high; lvs. 3-7 cm. long, pinnate, pinnatifid into 3-5 lanceolate lobes, glabrous, pedicels 2.5-6 cm. long, slender; sepals loosely hairy on inner surface, lanceolate, 4-5 mm. long; corolla campanulate; petals white with 8-10 longitudinal, transparent lines, obovate, rounded-truncate, 8-11 mm. long, glabrous; style 5-7 mm. long, divided into 5 filiform branches in the upper quarter; stamens ca. 2.5 mm. long; some filaments with a yellow disk-like gland at the base; nutlets 5, ca. 2 mm. in diam., acutely tubercled near summit. -- Lower meadow along small tributary of Esperanza Creek. June.

#### EUPHORBIACEAE

##### Eremocarpus

Eremocarpus setigerus (Hook.) Benth. Turkey-Mullein.

Low broad gray scented annual with heavy stellate pubescence and longer stinging hairs; forming dense rounded masses 3-20 cm. high and 5-50 cm. across; lvs. alternate, entire, ovate, 2-6 cm. long, 3-nerved, on petioles ca. as long; staminate fls. in terminal cymes, calyx 5-6 parted,

ca. 2 mm. long, stamens 6-7, exserted; pistillate fls. 1-3 in lower axils, pubescent, without calyx or corolla; ovary with 4-5 glands at base; caps. 4 mm. long; seeds dark, 3-4 mm. long, slightly ridged. -- Along dry roads throughout property. August.

### Euphorbia

Euphorbia ocellata Dur. & Hilg. Spurge.

Prostrate glabrous annual, the stems 1-2 dm. long; median lvs. ovate, 4-9 mm. long, obtuse or mucronulate; stipules mostly distinct, filiform, entire or parted; cyathia solitary at the nodes, campanulate, 1.5-2 mm. long; glands not appendaged, discoid or slightly elongate radially, ca. 0.5 cm. wide; staminate fls. 40-60; caps. glabrous, subglobose, 2-2.3 mm. long; seeds round-ovoid, whitish, 1.3-1.6 mm. long, smooth, punctate. -- Roadside at southern end of canyon. August.

### DATISCAEAE

### Datisca

Datisca glomerata (Prese) Baill.

Stout perennial glabrous herbs, 1-2 m. tall, branched; lvs. ovate to lanceolate in outline, acuminate, 1-2 dm. long, the segms. lanceolate, sharply incised-serrate; petioles 2-4 cm. long; fls. several in each axil of a leafy raceme, corolla lacking; male calyces 2 mm. long, of 4-9 unequal lobes; 8-12 stamens; female 5-8 mm. long, 3-toothed,

occasionally containing 4 stamens; style ca. 6 mm. long; caps. 6-8 mm. long; seeds light brown, subcylindric, ca. 1 mm. long and with ca. 11-12 rows of small pits. -- Small islands of Esperanza Creek. Male fls. bloom in June, female fls. in August.

## VIOLACEAE

### Viola

Viola glabella Nutt. Violet.

Bright green and glabrous or sparsely puberulent, arising from branching, horizontal, scaly rootstocks; the stems ascending or erect, 7-30 cm. high; basal-lvs. reniform-cordate, 3-8 cm. broad, crenate-serrate, petioles 5-20 cm. long; stem-lvs. similar, usually exceeding their short petioles; stipules small, membranous; peduncles 2-4 cm. long; petals pale yellow, 8-14 mm. long, the lower and lateral ones purple-veined, the lateral pubescent on the claw, with short clavate hairs; spur saccate, 2-3 mm. long; sepals 5-7 mm. long; cleistogamous fls. ca. 2.5 mm. long; stamens 5; caps. 8-10 mm. long, oblong, abruptly beaked; seeds pale brown, shining, ca. 2 mm. long. -- West slope of upper meadow. April.

## HYPERICACEAE

### Hypericum

Hypericum anagalloides Cham. & Schlecht. Tinker's Penny.

Annual or perennial, procumbent, often in mats, the

stems rooting at nodes, 5-15 cm. long, herbage glabrous; lvs. elliptic to ovate, obtuse, 5-7-nerved, 5-14 mm. long; fls. in few-fl'd. cymes, salmon-color; sepals 2.5-3; styles 3; caps. 1-loculed with 2-5 parietal placenta, ca. 3 mm. long; seeds many, small. -- Roadside at southern end of upper meadow. August.

Hypericum perforatum L. Klamath Weed.

Perennial with leafy basal offshoots, the stems simple, tough, 4-10 dm. high, much branched; lvs. linear to elliptic oblong, 1.5-2.5 cm. long, subtending, short leafy branchlets; cymes densely fld., sepals lanceolate, acuminate, 5-6 mm. long; petals yellow-orange, sometimes black dotted, 8-12 mm. long, twisting after anthesis; stamens many, in 3-5 groups; caps. 7-8 mm. long, narrow-oblong; seeds black, shining, cylindrical, 0.5-0.8 mm. long, reticulate. -- East slope of upper meadow. June-July.

#### CRUCIFEREAE

##### Capsella

Capsella bursa-pastoris (L.) Medic. Shepherd's-Purse.

Erect annuals, 2-5 dm. tall, branched or simple, hirsute at base; basal lvs. in a rosette, sharply pinnatifid, petioled, 3-7 cm. long; cauline lvs. lanceolate, sessile with auricled bases; pedicels slender, spreading or ascending, 10-15 mm. long; fls. white, 2-3 mm. long; silicles obcordate, flattened contrary to the narrow partition, ca. 6 mm. wide, with straight or slightly convex sides; style almost none.

seeds several, narrow-oblong, brownish, smooth, ca. 1 mm. long. -- Throughout property. March.

### Dentaria

Dentaria californica Nutt. Toothwort.

Glabrous perennial from deep rhizomes 4-6 mm. thick; rhizomal lvs. mostly 3-foliolate, the lfts. broadly ovate, often cordate, 2-5 cm. broad sinuate to dentate; stems slender, erect, 1-4 dm. high; cauline lvs. 2-3, 3-5 foliolate or lobed, the lfts. lanceolate to ovate, toothed to entire; racemes many-fl'd.; fruiting pedicels ascending, 1-2.5 cm. long; petals pale rose to white, mostly 9-14 mm. long; siliques 2-4 cm. long, 2-3 mm. broad; style stout, 2-6 mm. long. -- West bank of Esperanza Creek near fireplace in lower meadow. April.

### Draba

Draba verna L. Whitlow-Grass.

Annual, with lvs. all basal, spatulate to oblanceolate, 1-2.5 cm. long; entire to denticulate, short pilose-hirsute with branched hairs; scapes slender, 4-10 cm. high; pedicels ascending 1.5-2.5 cm. long; sepals ca. 1.5 mm. long; petals white, ca. 2.5 mm. long, bifid; silicles elliptic, 5-10 mm. long, 1.5-4 mm. broad, glabrous; styles ca. 0.1 mm. long. -- Throughout property. March-April.

### Nasturtium

Nasturtium officinale R. Br. Water-Cress.

Aquatic perennials, with ascending stems 1-4 dm. long; lvs. pinnate, glabrous 1-6 cm. long; with 3-9 ovate-round lfts., 5-20 mm. long, subentire; pedicels divergent; fls. 3-4 mm. long white, in terminal racemes; siliques ca. 1 cm. long, scarcely evident; seeds in 2 rows in each locule, ca. 1 mm. long, brown, reticulate. -- Small tributary of Esperanza Creek on west bank in lower meadow. May.

### CARYOPHYLLACEAE

#### Cerastium

Cerastium viscosum L. Chickweed.

Erect annual, 1-2 dm. high with occasional branching; lvs. opposite, narrowly elliptic, hairy, 1-2 cm. long; bracts, small, green; infl. a glomerate cyme; pedicels ca. as long as calyx; sepals 5, lanceolate, with long glandular hairs, with or without scarious margins, 4-6 cm. long; petals white, 2-cleft, slightly shorter than sepals; stamens 10 inserted around base of capsule; styles 5, opposite the sepals; caps. slender, dehiscent at apex by 10 teeth; seeds orange, muriculate, ca. 0.5 mm. long. -- Common throughout property. May.

#### Silene

Silene californica Durand. Catchfly.

Perennial from a stout taproot, the stems several, leafy, suberect, pubescent and somewhat glandular, 2-4 dm. long; lvs. oblanceolate, 3-7 cm. long, 1-2 cm. broad; fls. few to many;

pedicels mostly 2-3 cm. long, calyx broadly tubular, 1.5-2.5 cm. long, distended in fr., the lobes 2.5-5 mm. long; petals crimson, much exserted, 2-3 cm. long, the blades 1-1.5 cm. long, deeply 4-lobed, with appendages 1-2 mm. long; carpophore 2-3 mm. long, puberulent; caps. ovoid; seeds orange, round, ca. 2 mm. broad, conspicuously papillate.  
 -- Lower meadow on west side of Esperanza Creek. June.  
Silene gallica L. Catchfly.

Erect annual, simple to branched 1.5-4 dm. high, hirsute and strigulose, glandular pubescent above; basal lvs. oblanceolate, obtuse, mucronate, the cauline somewhat narrower, 1-3.5 cm. long; infl. leafy-bracted, 1-sided, the pedicels 2-5 mm. long; calyx 10 nerved, 7-10 mm. long, inflated in age, glandular-pubescent, somewhat constricted at the orifice; petals whitish to pinkish; slightly longer than calyx, the blades elliptic, entire, the linear appendages 2 mm. long, acute, 2 per petal; carpophore 1 mm. long, pubescent, caps. 7-9 mm. long; seeds white-grayish, somewhat heart-shaped, 1-1.5 mm. long, minutely villous.  
 -- Northern end of the upper meadow. June.

PORTULACACEAE

Calandrinia

Calandrinia ciliata (R. & P.) DC. var. menziesii (Hook)

Macbr. Red Maids.

Annual, simple or more usually with several spreading stems from the base, these 1-4 dm. long, subglabrous; lvs.

well distributed, petioled, linear, 1.5-6 cm. long, somewhat fleshy; fls. in leafy racemes, the pedicels suberect; 0.5-2.5 cm. long; sepals 2, ovate, short-acuminate, glabrous or hispidulous on margin and midrib, 4-7 mm. long; petals 5, rose-red, 5-15 mm. long; caps. ovoid, pointed, 4-7 mm. long; seeds many, black, shining, minutely tuberculate, ca. 1 mm. in diam. -- Throughout property. March-April.

### Montia

Montia linearis (Dougl.) Greene.

Erect branched annual, 6-15 cm. high; lvs. alternate, 1.5-3.5 cm. long, the petioles with enlarged scarious bases; infl. terminal, of loose-fld. racemes 2-5 cm. long, subtended by scarious, ovate-lanceolate bracts; fls. 2-7, nodding, pedicels 6-14 mm. long, sepals 2, subequal, reniform, 3.5-4 mm. long, thin, veiny, green with a white margin and turning yellow throughout in age; petals 5, 4-5 mm. long, rounded or retuse, clawed, unequal in width and length; stamens 3, caps. ovoid, narrowed at the base; seeds 3, 1.5-2 mm. long, black, shining. -- Moist ditches in the upper meadow. April.

Montia perfoliata (Donn.) Howell. Miner's Lettuce.

Glabrous, succulent, green annual, branched from the base, 1-2 dm. high; basal lvs. rhombic-ovate to elliptic-obovate, long petioled, 5-20 cm. long; cauline lvs. 2, opposite, connate into a suborbicular disk 2-8 cm. broad; racemes elongate, sessile or peduncled, the fls. usually whorled; pedicels, commonly 3-8 mm. long, often recurved in



fr.; sepals 2 rounded, ca. 3-5 mm. long, petals white or pink, clawed, obovate, 4-6 mm. long; seeds black, shining, rounded, minutely punctate, 1-2 mm. in diam. -- Throughout property in moist, shaded places. April-June.

## POLYGONACEAE

### Eriogonum

Eriogonum latifolium Sm. ssp. nudum (Dougl. ex Benth.)

S. Stokes. Wild Buckwheat.

Perennial with a short simple or few-branched caudex, lvs. basal, spreading, oblong to oblanceolate to broadly elliptic-ovate, 2-6 cm. long, rounded at apex, subcordate to cuneate at base, glabrate above, white-tomentose beneath, undulate on the margins, the petioles about twice as long; flowering stems one to several, sparsely branched above, 3-10 dm. high, glabrous; bracts of the first nodes sometimes foliaceous, invol. in axillary or terminal heads, subcylindric, 3-5 mm. long, glabrous or slightly tomentose; calyx-lobes broadly ovate, 2.5 mm. long, white with rose-colored veins, glabrous without; fls. hairy at base; aks 1.5-3 mm. long, glabrous, brown, lance-ovoid, 3-angled. -- Upper meadow and slopes. August.

### Rumex

Rumex angiocarpus Murbeck. Sheep Sorrel.

Dioecious perennial with slender running rootstocks; stems tufted, erect or with decumbent base, 1-4 dm. high;

lvs. lanceolate, the blades 2-6 cm. long, with hastate bases, the lower petioles often longer than blades; fls. nodding, in naked panicles, yellowish, aging red; stamens 6, erect; styles 3; stigmas tufted; pedicels jointed at summit; calyx ca. 1 mm. long, green, the sepals scarcely enlarged in fr., united with the nutlet into a single body. -- Throughout property, especially in damp areas. June-July.

Rumex californica Rech. f. Dock Sorrel.

Perennial from a stout taproot, stems 3-7 dm. high, ascending, or suberect, slender, but firm, often branching, leafy; lvs. to 8 cm. long and 1 cm. wide, plan, glabrous to pubescent, linear, acute; petioles subsessile to 1 cm. long panicle branches slender; divergent, the lower multiflowered glomerules remote, the upper approximate; pedicels jointed near middle; outer sepals broad-lanceolate, 2-3 mm. long, the valves in fr. 3 mm. long, 2-3 mm. wide, triangular, truncate at base, somewhat denticulate, veiny, green-brown.

-- Along west bank of Esperanza Creek among rocks.

July-August!

Rumex crispus L. Curly Dock!

Perennial from a taproot, glabrous and dark green; stems rather slender, erect, 3-12 dm. high, simple or branched above, the branches erect; lvs. distinctly crisped and wavy-margined, the lower oblong to oblong-lanceolate, 1-3 dm. long, long-petioled, the upper smaller and narrower with short-petioled, all cordate or obtuse at the base; fls. rather loosely whorled; racemes 8-15 cm. long, forming an open or rather strict panicle; pedicels jointed at the base,

longer than the fr.; valves 3-4 mm. long, broadly ovate, truncate or cordate at base, somewhat erose-dentate, each bearing a small oblong grain; ak. dark brown, shining, 2 mm. long. -- Southern edge of upper meadow. July.

## PRIMULACEAE

### Dodecatheon

Dodecatheon hendersonii Gray. Shooting Star.

Plant with an erect, short rootcrown producing many white fleshy-fibrous roots and rice-grain bulblets at flowering time; lvs. glabrous, the blades ovate to broadly obovate, 2.5-4 cm. long, rather abruptly tapering to a petiole usually of about equal length, the margins often crisped, entire or denticulate; scape 2-4 dm. high, glabrous; umbels 2-8 fld.; fls. 5-merous; the lobes 12-20 mm. long, 4-8 mm. broad, purple with a band of yellow at base edged with white, the tube a dark black purple band; fils. united into a tube 2 mm. long, black-purple; anthers 4-5 mm. long, linear, acutish at apex forming a slender pointed beak, the connectives dark purple; caps cylindric, glabrous, seeds brown, pitted, angled, ca. 1.3 mm. long. -- Primarily on shaded east slopes throughout property. April-May.

### Trientalis

Trientalis latifolia Hook. Star-Flower.

Low, glabrous perennial, stems erect, 0.5-2 dm. high, slender; lower lvs. few, scalelike, the main lvs., 4-6,

in a single whorl at summit, ovate to obovate, abruptly acute at both ends, 4-7 cm. long, 2.5-5 cm. wide, on petioles 1-4 mm. long; pedicels ca. half as long as lvs.; calyx of 5-6 sepals, lobes narrow, 4-6 mm. long; corolla spreading, flat, lobes free almost to base, pink, 8-15 mm. wide, the segms. abruptly acuminate; fils. connate at base, slender; anthers oblong; caps. shorter than calyx; seeds few, globose. -- Shaded bank on east side of Esperanza Creek in lower meadow. May-June.

### PLANTAGINACEAE

#### Plantago

Plantago lanceolata L. English Plantain.

Perennial with strong caudex, with short-villous hairs; lvs. lanceolate, erect or spreading, basal, the blades 5-20 cm. long, attenuate at apex and gradually narrowed into slender somewhat shorter petioles; scapes 2-8 dm. high, arched-ascending; rather slender; spikes dense, ovoid at beginning, cylindric and 2-7 cm. long; front sepal connate, ca. 3 mm. long; corolla almost rotate; anthers well-exserted; style 1; caps. ovoid-oblong, dehiscent below middle; seeds 1-2, brown, shining, deeply hollowed on one face, ca. 3 mm. long. -- Throughout property. May-June.

### ERICACEAE

#### Arctostaphylos

Arctostaphylos mariposa Dudl. in Eastw. Mariposa Manzanita.

Erect shrub, 1-4 m. high, with smooth dark red-brown, freely exfoliating bark and pale glaucous-green glandular-pubescent branchlets; lvs. glabrous to glandular-hairy, round, ovate, 2.5-4 cm. long, mucronate at apex, on petioles 8-12 mm. long; infl. open; bracts deltoid-acuminate, ca. 2 mm. long; pedicels slender, glandular-pubescent, 10-12 mm. long; calyx-lobes ovate, acute, glandular-villous, pinkish, 1-1.5 mm. long; corolla urn shaped pink to white 6-8 mm. long; fr. globose, light brown or red, glandular-viscid, 7-10 mm. broad, the nutlets separable, roughened on back.  
 -- Primarily on slopes of upper meadow. March-April.

#### ASCLEPIADACEAE

##### Asclepias

Asclepias cordifolia (Benth.) Jeps. Milkweed.

Herbaceous, from a stout woody root, glabrous to slightly puberulent; stems 4-8 dm. high, tinged with purple in upper parts; lvs. opposite, ovate to lance oblong, acute, cordate clasping, 4-13 cm. long; umbels loosely many fld., 1-several at apex and in upper axils, peduncles 2.5-4 cm. long, pedicels filiform, 1.5-3 cm. long; calyx-lobes purple, somewhat pubescent, 3-4.5 mm. long; corolla-lobes rose-purple 6-8 mm. long, oblong, glabrous; hoods purplish, short-cylindric, open at top and cleft down inner surface, truncate above and the inner angles produced into an ascending toothlike cusp; follicles lanceolate to oblong, straight, long acuminate, 10-12 cm. long, glabrous; seeds 7-8 mm. long,

the coma 2.5-3.5 cm. long. -- Adjacent to trail leading through canyon. May.

Asclepias fascicularis Dcne in A. Dc. Milkweed.

Herbaceous, the stems several, erect, 5-10 dm. tall, glabrous to sparsely puberulent, lvs. linear-lanceolate, usually in whorls of 3-6, or lower and upper fewer, 4-10 cm. long, 4-13 mm. wide, short petioled, commonly folded along midrib; umbels several in upper axils, many-fld.; peduncles 2-5 cm. long; pedicels slender, 8-15 mm. long; calyx pubescent, ca. 2 mm. long; corolla greenish-white, often tinged purple, the lobes oblong, 4-5 mm. long; hood ca. as long as stamens, broadly ovate; horns slender, exserted, incurved; follicles smooth; narrow acuminate, 6-9 cm. long; seeds ca. 6 mm. long; the coma ca. 3 cm. long. -- Along west bank of Esperanza Creek in lower meadow. August.

Asclepias speciosa Torr. Milkweed.

Stout, herbaceous, soft-tomentose throughout the stem 6-12 dm. high, leafy to summit, lvs. opposite, oval to oblong, short petioled, acute at apex, rounded at base, 5-15 cm. long; umbels few, peduncled, the lower with fewer fls. than the many fld. terminal one; pedicels and calyx heavily tomentose, the former 1-2.5 cm. long, the latter 5-7 mm. long; corolla lobes rose-purple, 8-10 mm. long; wooly on the back; hoods pink, aging yellowish, much longer than stamens, with wide involute base and then abruptly contracted into a nearly flat lance-shaped part; horns much exserted, incurved, follicles ovoid, wooly, 6-12 cm. long, seeds ca. 8 mm. long.

-- Roadside in canyon halfway between meadows. June.

CONVOLVULACEAE

Convolvulus

Convolvulus arvensis L. Bindweed.

Perennial from a deep rhizome with prostrate or somewhat twining stems 3-10 dm. long, herbage glabrous; lf.-blades ovate-hastate, rounded at apex, 1-3 cm. long; petioles slender, shorter than the blades; peduncles 1-3 fld., longer than the lvs., bract ca. 1 cm. below calyx, mostly subulate to narrowly spatulate; sepals fused, oblong, obtuse, 3-4 mm. long; petals fused, cream with pink, 1.3-2 cm. long, seeds dark, finely punctate, oval, 3-4 mm. long.

-- Throughout upper meadow and canyon. May-June.

Convolvulus occidentalis Gray. Morning Glory.

Tall perennial, crawling and climbing shrubs, slightly puberulent; lf.-blades triangular-hastate, 2-5 cm. long, acuminate, basal lobes broad, usually 2-toothed, the cent. lobe ovate; petioles shorter than the blades, peduncles usually 1-fld., longer than the lvs.; bracts 2-5 mm. below the calyx, lanceolate 6-13 mm. long, sepals unequal, fused, ovate, 8-12 mm. long, mucronate; petals fused, dirty-white to pinkish, aging purple, 3-4 cm. long; stigma linear; seeds dark, ca. 4 mm. long. -- Along trail in upper meadow. June.

POLEMONIACEAE

Allophyllum

Allophyllum divaricatum (Nutt.) A. & V. Grant.

3-6 dm. high, with stout stems pubescent to villous and with a skunklike odor; lower lvs. few, entire to pinnately lobed with 1-6 pairs of lobes; infl. congested in early stages, but with pedicles elongating in fr.; calyx in fr. 4-5.5 mm. long; corolla regular 8-15 mm. long, the tube rose-violet and the lobes pink-lavender, the tube 3-5 times as long as lobes; stamens unequally inserted; unequal in length; stigmas 3, usually included; locules of caps. 1-seeded. -- West slope of canyon. July-August.

CollomiaCollomia Grandiflora Dougl. ex Lindl.

Erect annual, simple 2-8 dm. high, sometimes branched from base or even above, leafy throughout, glabrous, or pubescent; lvs. linear to lanceolate, entire, sessile, 3.5-6 cm. long, passing upward into ovate leafy bracts; fls. sessile in dense terminal heads; calyx obconic, 7-10 mm. long, becoming chartaceous, the lobes lanceolate; corolla narrow funnelform, pale yellow, 2-3 cm. long; tubes 15-25 mm. long, limb 5-8 mm. long; stamens unequally inserted, unequal in length; stigma included; caps. ovoid, ca. 5 mm. long; seed 1 per locule, brown, ca. 3 mm. long. -- Southern edge of upper meadow. June.

Collomia heterophylla Dougl. ex Hook.

Erect, decumbent or spreading annuals, 5-15 cm. high, stems much-branched, rarely simple, herbage glandular-pilose to villous; lvs. from variously toothed to pinnately



dissected, opposite or alternate below, alternate above, thin, often very diverse on an individual plant; fls. sessile, congested in clusters at end of branches and in axils of upper lvs.; calyx campanulate, lobes lanceolate-attenuate; corolla narrowly funnelform, 8-12 mm. long, pink, lobes rotately spreading, stamens inserted unequally on the throat, the lower most on short filaments near base of throat, the upper on long filaments, exserted, filaments very unequal; stigma reaching the lower most stamens; locules 2-3 seeded, ca. 1.3 mm. long. -- Lower meadow along west bank of Esperanza Creek. May.

### Gilia

Gilia capitata Sims ssp. pedemontana V. Grant.

Tall slender annuals with relatively shallow roots and glabrous to glandular stems, mostly 2-10 mm. in diam. below, simply branched above, 3-10 dm. high, lower lvs. pinnately or bipinnately dissected, the ultimate segments 1-4 mm. wide, 3-8 mm. long, fl. heads 1.5-3 cm. in diam; calyx densely floccose, the lobes acuminate 1-2 mm. wide at base, 2.5-3 mm. long, with recurved tips; corolla 7-10 mm. long, the lobes oval, 1.5-2.5 mm. wide, 3-5 mm. long; blue-violet, fils. 2-3 mm. long; anthers ca. 1 mm. long, pollen blue; style 6-7 mm. long; stigmas 3, 0.2-0.5 mm. long; caps. subglobose, 3-4 mm. in diam. dehiscing by splitting of dorsal sutures from top downward; seeds 6-15, ca. 1.5 mm. long. -- West slope in lower meadow. May.

LinanthusLinanthus bicolor (Nutt.) Greene.

Annual, simple, erect stem, 3-15 cm. high, puberulent; leaves palmately 3-7 cleft into linear segments 3-10 mm. long, hispid; fls. sessile in leafy bracteate heads; calyx hispid, 7-10 mm. long, deeply cleft into subulate lobes, slightly scarious in the sinuses, corolla salverform, 2-3 cm. long, bi-colored, the lobes rose-purple, ca. 3 mm. long, obovate, the throat yellow, 1-2 mm. long, the tube purple, stout 1.5-2.5 cm. long, puberulent; stamens inserted in throat, exserted; stigma lobes 3, 0.5-1.5 mm. long; caps. 3-4 mm. long, the locules 2-4 seeded; seeds oblong, ca. 1 mm. long. -- West slope in upper meadow. April.

Linanthus filipes (Benth.) Greene.

Annual, erect and branched above or diffuse from base, 5-10 cm. high, the stem cymosely branched, puberulent; lvs. opposite, palmately 5-parted into subulate segm. 3-6 mm. long; pedicels filiform, 4-12 mm. long; calyx narrow turbinate, 2-4 mm. long, hispidulous deeply cleft into linear lobes, the sinus ca. 2/3 filled with hyaline membrane; corolla funnel-form, tube yellow, lobes purple with white band between, 4-6 cm. long, glabrous within, fls. hairy at base, inserted low; stigma exserted, 3 lobed; seeds several in each locule. -- West slope of upper meadow. April.

Linanthus montanus (Greene) Greene. Mustang Clover.

Erect annual, the stems fairly stout, simple or few branched at base, 1-5 dm. high, pubescent; lvs. remote, 5-10

cleft into linear, hispid-ciliate lobes ca. 2 cm. long; fls. sessile in bracteate heads, the bracts coarsely ciliate; calyx ca. 1 cm. long, deeply divided into acerose; ciliate lobes, the sinuses half membranous; corolla salverform, 22-30 mm. long, white with a purple spot at the base of each lobe, the tube long exserted, pubescent, the throat short, yellow, the lobes 5-7 mm. long; stamens glabrous, inserted near middle of the throat; stigma 3-lobed; caps. ca. 5 mm. long, few seeded, seeds brownish, ca. 2 mm. long, angled. -- West slope of lower meadow. May.

### Microsteris

Microsteris gracilis (Hook) Greene.

Annuals with erect slender stems, 1-2 dm. high, generally simple and glabrous to pilose below, branched and glandular-pubescent above; lvs. 1-3 cm. long, short-petioled, the upper sessile, somewhat reduced, opposite; infl. cymose, glandular, usually crowded; calyx 6-8 mm. long, the free lobes shorter than tube; corolla 8-12 mm. long, well exserted, the tube yellowish-lavender, the lobes purple, ca. 2 mm. long; stamens included; stigma 3-lobed; caps. ca. 5 mm. long; seeds brownish, ca. 3 mm. long. -- Upper meadow. April.

### Phlox

Phlox speciosa Pursh. ssp. occidentalis (Durand) Wherry.

Suffrutescent, the stems 2-4 dm. high, foliose; herbage puberulent, the upper glandular-puberulent; lvs. rather coriaceous, lance-linear, 1-5 cm. long, 3-8 mm. broad,

short-acuminate; cymes few-fl'd., the lower fls. leafy-bracted; pedicels 3-12 mm. long, very slender; calyx mostly 7-10 mm. long, glandular-puberulent, the lobes linear, acute, erect, shorter than the tube; corolla lavender-purple, the tube 8-11 mm. long, the lobes obcordate to deeply 2-lobed, 7-12 mm. long; stamens included; styles including stigmas 2-4 mm. long, caps. 6-7 mm. long, mostly with 1 seed ca. 3 mm. long. -- East slope of upper meadow. May.

#### HYDROPHYLLACEAE

##### Hydrophyllum

Hydrophyllum occidentale (Wats.) Gray. Waterleaf.

Rhizomes elongate; stems 2-6 dm. high, retrorse-hispid; lvs. oblong in outline, 7-16 cm. long, on shorter to equally long petioles, strigulose, paler beneath, somewhat glaucous, pinnatifid into 7-15 principle oblong divisions with ovate lobes; cymes globose; the pedicels 2-6 mm. long; calyx-lobes strigulose, hispid, narrow, 3-5 mm. long; corolla white to violet, 7-10 mm. long, the lobes 4-6 mm. long, oblong; stamens exserted, equal; style exserted, shallowly bifid; caps. ca. 4 mm. in diam.; seeds 1-2, brown, ca. 3 mm. thick. -- Steep, shaded slope on east side of Esperanza Creek. May.

##### Nemophila

Nemophila heterophylla F. & M.

Stems slender, hirsutulous, mostly erect, 1-3 dm. long; lower lvs. opposite, oblong in outline, 1.5-2.5 cm. long, on petioles ca. as long, 5-7 pinnate into rounded rather remote

divisions, these entire or 1-3 toothed, upper lvs. 3-5 lobed; pedicels slender, mostly longer than lvs.; calyx lobes lance-ovate, 2.5-3.5 mm. long, with reflexed auricles 0.5 mm. long; corolla bowl-shaped, white, 5-10 mm. broad, with obovate lobes; appendages triangular to wedge shaped; style 2.5-3.5 mm. long; caps. round 3-5 mm. in diam., hispid; seeds 2-4, brown, ovoid, mostly smooth, 1-2 mm. long, the cucullus deciduous, often papillaeform. -- Throughout property. March-April.

Nemophila menziesii H. & A. Baby Blue-Eyes.

Diffuse, the stems obscurely angled, pubescent, 1-3 dm. long; lvs. opposite, oval to oblong in outline, mostly 2-6 cm. long, pinnately divided into 9-13 oblong divisions, these again toothed, sparingly appressed-hispid; petioles shorter to as long; pedicels slender, longer than lvs.; calyx-lobes lanceolate, 5-7 mm. long, with narrow auricles, 1.5-2.5 mm. long; corolla bowl-shaped, 1.5-4 cm. broad, typically powder to bright blue with a white center, the lobes obovate, longer than the tube; fils. about as long as the tube, the appendages narrow; style 3-5 mm. long; caps. ovoid, 5-12 mm. in diam.; seeds usually 10-20, oblong, dark, ca. 2 mm. long. -- West slope of lower meadow. March-April.

Nemophila parviflora Dougl. ex Benth.

Stems weak, hispid, 1-4 dm. long; lower lvs. opposite, ovate, 1-4 cm. long, 5-7 pinnate into entire or lobed divisions, appressed-hispid, on petioles of equal length; upper lvs. alternate or opposite, short-petioled, pedicels 2-3 cm. long; calyx-lobes lanceolate 2-4 mm. long, the

reflexed auricles 0.5-1.0 mm. long, corolla campanulate, white, 3-5 mm. broad; appendages linear; fls. shorter than tube; anthers black, style 1-2 mm. long; caps. round, 3-5 mm. in diam.; seeds 2-4, orange, ovoid, ca. 2 mm. long, the culcullus deciduous. -- Sparse in upper meadow. April.

## BORAGINACEAE

### Amsinckia

Amsinckia intermedia F. & M. Fiddleneck.

Stem 2-5 dm. tall, slender, erect, sparsely, bristly, otherwise sub-glabrous except for pubescence toward infl.; lvs. linear, 2-8 cm. long, the lower petioled, sparsely hirsute on both sides; racemes leafy-bracteate at base, 5-15 cm. long in age; fls. homostylic, nearly radially symmetrical; calyx 5-10 mm. long in fr., the lobes separate, white-hirsute on edges; corolla yellow-orange, 7-10 mm. long, the tube slightly exserted, the limb 2-5 mm. broad; nutlets 2-3 mm. long, ovoid, tuberculate, medially keeled and with some oblique ridges. -- Northern edge of upper meadow in a small ditch. June.

### Cynoglossum

Cynoglossum grande Dougl. ex Lehm. Hound's Tongue.

Perennial from a heavy root; stems erect, glabrous, 3-9 dm. high; lvs. mostly basal or on lower stem, ovate, glabrous, the blades ovate, 8-15 cm. long, abruptly narrowed into petioles often as long; peduncle well developed;

panicle lax; pedicels commonly 1-2.5 cm. long; calyx lobes 5-8 mm. long, narrow-oblong, pubescent; corolla 8-12 mm. long, blue, the tube purple with ridged crown, the lobes rounded; nutlets 5-6 mm. long, depressed glabrous. -- Steep, shaded bank on east side of Esperanza Creek in lower meadow; also a few specimens on eastern perimeter of upper meadow. May.

### Myosotis

Myosotis versicolor (Pers.) Sm. Forget-Me-Not.

Annual 1-4 dm. tall, spreading-hirsute below, strigose above; lower lvs. spatulate, 1-3 cm. long, petioled; upper oblong to lanceolate, subsessile; fruiting pedicels 1-2.5 mm. long; calyx 3-4 mm. long, with short hooked hairs; corolla yellowish becoming blue, ca. 2 mm. broad; infl. a short scorpioid cyme; style longer than the nutlets; nutlets 1-1.5 mm. long, ovoid, smooth, shining, sharply margined, the attachment scar flat. -- Primarily in both meadows. June.

### Plagiobothrys

Plagiobothrys nothofulvus (Gray) Gray. Popcorn Flower.

Erect annual 2-5 dm. high, the stem branched mostly above, villous with short hairs, or sometimes hispidulous; lvs. largely in a basal rosette, oblanceolate, 3-10 cm. long, sparsely villous, the cauline few, lance-linear, reduced upward; root, stem, petioles, etc., with copious purple dye, infl. once or twice forked, the spikes slender, mostly

bractless, elongating and lax; calyx densely appressed-silky-villous, usually tawny, 2-3 mm. long in fr., the lobes erect, ca. as long as tube, this circumscissile in fr., corolla, 6-8 mm. broad; nutlets 1-4, ovoid, abruptly constricted into acute apex, the back with rectangular granulate areas between narrow ridges and keels; scar annular, median at base of the narrow ventral keel. -- Throughout property. June.

### SCROPHULARIACEAE

#### Collinsia

Collinsia heterophylla Buist ex. Grah. Chinese Houses.

Stems simple or somewhat branched, villous, green, purple toward base, 2-5 dm. high; lf.-blades lanceolate, slightly serrulate, glabrous, 2-7 cm. long, lower short-petioled, opposite; fls. 2-7 in short pedicelled whorls; bracts 5-20 mm. long; calyx green to red-purple, pubescent, tube ca. 2 mm. long, lobes lanceolate, 5-7 mm. long, acute, corolla 1.5-2.5 cm. long mostly glabrous with villous hairs at base on inside, upper lip white and rose-purple, lower lip rose-purple with a white keel; upper fls. bearded half their length and with a linear, basal, bearded appendage ca. 2 mm. long projecting into the nectar pouch; caps. 5 mm. long, seeds 2 mm. long, flattened, ovate, slightly winged. -- West slope in lower meadow. June-July.

Collinsia sparsiflora F. & M. var. collina (Jeps.) Newsom

Stems mostly divaricately brached, 0.5-2.5 dm. tall, glabrous to somewhat puberulent; lf.-blades glabrous to



sparsely puberulent, narrow-oblong, entire to crenulate, 1-3 cm. long, or the lower more deeply toothed, and with petioles to 1 cm. long, infl. lax, the bracts linear each mostly subtending 1-fl. on a pedicel 1-3 cm. long; calyx 5-6 mm. long, glabrous except for the setulose margins, purple, with low basal pouch, the upper lip whitish toward base, purple-dotted, the lower longer, the keel somewhat hairy; caps. 5-6 mm. long; seeds round, rugulose, winged, 1.5-2.5 mm. wide. -- East slope at southern end of upper meadow. April-May.

### Mimulus

Mimulus bicolor Hartw. ex. Benth. Monkey-Flower.

Glandular-pubescent annual, erect, 5-15 cm. tall, simple; lvs. opposite, oblanceolate to obovate, 1-3 cm. long, obtuse, dentate, subsessile; pedicels 8-16 mm. long, calyx 6-9 mm. long, angled, the triangular-acute teeth 2-3 mm. long, equal; corolla somewhat bilabiate, 1.5-2.2 cm. long, the throat short, broad, funnelform, with red spots on the pubescent ridges; lobes emarginate, the upper upcurved, usually white, the lower spreading, yellow, with red dots; anthers ciliate; caps. ca. 5 mm. long; seeds reticulate, oblong, yellowish, ca. 0.3 mm. long. -- West bank of Esperanza Creek near trial. May.

Mimulus cardinalis Dougl. ex. Benth. Monkey-Flower.

Freely branched viscid, villous perennial, the stems mostly erect, 4-8 dm. long, from a running rootstock; lvs. opposite, oblong to ovate, 3-7 cm. long, sessile, serrate,

longitudinally 3-5 veined, the upper with broad clasping bases; pedicels 3-6 cm. long; calyx tubular, 2-3 cm. long, angulate-winged, the teeth subequal, 4-5 mm. long, acute; corolla strongly bilabiate, 4-5 mm. long, scarlet, the throat narrow, yellowish, with several yellow hairy ridges, the upper lip arched-ascending, the lower decurved-reflexed; anthers ciliate, arched in the upper lip; stigmas fimbriolate; caps. oblong, acuminate, 16-18 mm. long, dehiscing through apex of septum; seeds narrow-oblong, apiculate, longitudinally wrinkles, ca. 0.5-0.6 mm. long.

-- West side of stream back in canyon. August.

Mimulus douglasii (Benth. in DC.) Gray. Monkey-Flower.

Subcaulescent or to 5 cm. high, annual, with recurved fine glandless hairs and some longer gland-tipped ones; lvs. narrow-elliptic, obtuse, longitudinally veined, 1.5-3 cm. long, short-petioled; pedicels 1-3 mm. long; calyx 9-12 mm. long, plicate-ridged, the lobes lanceolate, ciliate, the uppermost longer; corolla 2.5-4 cm. long, purple, glabrous externally, the tube ca. twice as long as calyx, the throat dark purple, ventrally streaked, the upper lip 7-10 mm. long, erect-arched, the lower lacking; anthers glabrous; stigmas unequal; caps. 5 mm. long, cartilaginous; seed oblong. -- West slope of lower meadow. May.

Mimulus guttatus Fisch. ex DC. Monkey-Flower.

Perennial, glabrous below the glandular pubescent infl., with creeping rootstocks, stems 0.5-6 dm. tall, mostly simple; lvs. opposite, oval, margins variable, 1-6 cm. long, the upper sessile, the lower long petioled; infl. racemose;

pedicels 2-5 cm. long; calyx campanulate, puberulent, dotted with red, inflated and 1.5-2.5 cm. long in fr., the lobes acute, the upper tooth mostly 2-3 times as long as the others; corolla yellow, usually closed by the hairy ridges, the upper lip with reflexed margins and shorter than lower spreading lip; anthers glabrous; stigmas fimbriolate; caps. stipitate, 7-9 mm. long; seeds brown, oblong, ca. 0.5 mm. long. -- Southern end of upper meadow along moist ditch.

May-June.

Mimulus kelloggi (Curran ex Greene) Curran ex Gray.

Monkey-Flower.

Pubescent caulescent annual, with some hairs gland-tipped; stems erect, simple or occasionally branched, 0.3-2 dm. tall; lvs. opposite, oblanceolate, obtuse, entire or nearly so, 1-5 cm. long, sessile or short petioled; pedicels 3-5 mm. long; calyx 12-15 mm. long, glandular-pubescent, the lobes 1-3 mm. long, obtuse; corolla 3-4 cm. long, rose-purple, glabrous throughout, the tube ca. twice as long as calyx, white below, the throat short, purple above, yellow ventrally with red dots, the lobes rounded, the upper ca. 7 mm. long, the lower half as long; anthers ciliate; stigmas ciliate, the upper short; caps. 8-10 mm. long, slightly arcuate; seeds oblong, apiculate, ca. 1 mm. long. -- West slope of lower meadow. April.

Mimulus pilosus (Benth.) S. Wats. Monkey-Flower.

White-villous annual, erect, branched, slightly viscid, 1-4 dm. high, flowering from near the base, lvs. opposite, lanceolate to oblong, 1-3 cm. long, sessile; pedicels 10-15

mm. long; calyx 6-8 mm. long, orifice oblique, short-campanulate, plane, the lobes unequal, lance ovate, the lowermost shortest and ca. as long as calyx-tube; corolla yellow, obscurely 2-lipped, 7-8 mm. long, the lower lip usually with marron spots; anthers glabrous; caps. 4-7 mm. long, loculicidal along whole upper side and on lower side toward apex; seeds muriculate, oblong-oboid, apiculate, ca. 0.5 mm. long. -- Southern end of lower meadow along a tributary of Esperanza Creek. August-October.

Mimulus torreyi Gray. Monkey-Flower.

Glandular-puberscent annual, stems erect, simple or branched, 0.5-2 dm. tall; lvs. opposite, obovate-oblong, 1-3 cm. long, entire, pinnate-veined, subsessile; pedicels 1-3 mm. long; calyx 7-10 mm. long, weakly angled, scarious at the base and below the sinuses between the narrow green ridges, the lobes subequal, acute, 1-2 mm. long; corolla bilabiate, 1.8-2.4 cm. long, rose to purple, externally pubescent, internally pilose, the throat ventricose, yellow-ridged, pubescent, the lobes rounded, the upper lip shorter; anthers glabrous; stigmas rounded, the upper shorter; caps. 7-8 mm. long, dehiscing throughout; seeds oblong, ca. 0.7 mm. long. -- West bank of Esperanza Creek. May-June.

Orthocarpus

Orthocarpus linearilobus Benth.

Stems erect, simple, 1.5-3 dm. high, pubescent, villous above; lvs. linear, the lower entire, the upper with 2-3 pairs of subfiliform lobes; spike dense; bracts 1-2 cm. long,

with 3 palmate divisions, the linear lobes occasionally purple tipped; calyx subequally 4-lobed, lobes yellow-tipped; corolla cream or yellow, 1.5-2.5 cm. long, pubescent, the galea sometimes rose-liliac, the lower lip yellow with 2 small purple dots at base and 3 larger ones toward summit; caps. ovoid, 7-10 mm. long; seeds brown to black, 1 mm. long, loosely coated. -- Few on west slope in upper meadow. April.

### Verbascum

Verbascum thapsus L. Common Mullein.

Stout stem, 5-10 dm. tall; basal lvs. densely pubescent, in rosettes, oblong-obovate to obovate-lanceolate, 15-40 cm. long including petioles, spongy, grayish-green; cauline lvs. elliptic-lanceolate, gradually reduced up the stem, decurrent; pedicels less than 2 mm. long; calyx 7-9 mm. long; corolla nearly regular; 20-25 mm. broad, yellow; caps. 5 mm. long, stellate-pubescent; seeds brown, irregular-oblong, 0.5-0.7 mm. long, with rows of pits. -- Primarily along ditch at southern end of upper meadow. August.

### LABIATEAE

#### Lamium

Lamium amplexicaule L. Henbit.

Annual, sparsely pubescent, stems branched from the base, 1-2 dm. long; lvs. roundish, truncate or cordate at base, coarsely crenate, the lower petioled, the upper sessile, 2-3 cm. wide; fls. small, few, in axillary and

terminal clusters; calyx pubescent, ca. 4-5 mm. long, tubular-campanulate, 5-nerved, 5-toothed, erect, corolla purple-red, 2-lipped, upper ascending and concave, the lower spreading, 3-lobed, 12-20 mm. long, the tube very slender; stamens 4, didynamous; nutlets ca. 2 mm. long, brown. -- Northern slope of upper meadow. March-April.

### Mentha

Mentha pulegium L. Pennyroyal.

Aromatic caulescent perennial herbs from rootstocks; stems erect, simple, slender, 2-5 dm. long, white pubescent; lvs. opposite, punctate, toothed, elliptic, 1-2 cm. long, canescent; fls. often in many whorls, rather remote, with reduced subtending lvs.; calyx campanulate, 3-4 mm. long, 5-toothed, 10-nerved, short-hirsute on nerves and teeth; corolla lavender, funnelform, bilabiate, ca. twice as long as calyx, the lobes villous; stamens 4, equal, exserted; nutlets ovoid, smooth. -- West slope of canyon. August.

### Monardella

Monardella villosa Benth. ssp. subserrata (Greene). Epl.  
Coyote-Mint.

Decumbent perennial from a branching woody base, the stems simple or branched, 2-5 dm. long, villous or pubescent in upper part; lvs. lanceolate, entire or commonly unevenly paler and villous-pubescent beneath, on slender petioles half as long; heads 1.5-2 cm. broad, often closely subtended by 1-2 pairs of ordinary lvs., the bracts ovate to broadly

lanceolate, 6-9 mm. long, usually purplish; calyx 7-8 mm. long, glandular-villous; corolla purple to pink, 15-18 mm. long, pubescent, the linear lobes 4-5 mm. long; stamens 4, not much exerted; style unequally 2-cleft at apex; nutlets oblong, smooth, 1.5-2.2 mm. long. -- West slope of lower meadow. July.

### Scutellaria

Scutellaria siphocampyloides Yatke. Skullcap.

Stems 2-3 dm. tall, glandular-pubescent, the hairs slightly curved; lf.-blades linear-oblong, 1.3-2.5 cm. long, obtuse, narrowed to a sessile base, entire; fls. axillary, on pedicels 3-5 mm. long; calyx glandular-pubescent, campanulate, gibbous, 2-lipped, the lips entire, 5-6 mm. long; corolla deep violet-blue, 20-25 mm. long, bilabiate, the upper lip arched, the lower deflexed; stamens 4, lower pair seated above the middle of the corolla tube, 1-celled; upper pair 2-celled; style unequally 2-cleft at apex; nutlets 4, black; rugose, on a short gynobase. -- West bank of Esperanza Creek in lower meadow. June.

### Stachys

Stachys stricta Greene. Hedge-Nettle.

Stems sprawling, simple or branched above, mostly 5-10 dm. high, villous hirsute; lvs. deltoid-oblong, acuminate, crenate-serrate, subcordate at base, 4-8 cm. long, the lower on petioles 2-4 cm. long; spikes interrupted in age, often 1-2 dm. long; fls. 8-12 in axil of each bract, forming

whorls; calyx campanulate, 5-6 mm. long, teeth 5, subequal, deltoid, weakly spinose, glandular-hirsute; corolla white, the tube ca. 6 mm. long, with an inner hairy ring below the middle; upper lip erect, concave, ca. 2 mm. long; lower, spreading, 3-lobed, 4-5 mm. long; stamens 4, didynamous; fils. scarcely exerted. -- Along west bank of Esperanza Creek in lower meadow. July-August.

SAXIFRAGACEAE

Lithophragma

Lithophragma affinis Gray. Woodland-Star.

Stems 3-8 dm. tall, glandular-hirsutulous; basal lvs. roundish, 1-4 cm. wide, lobed ca. 1/2 way to base into 3 crenate divisions, petioles 3-15 cm. long, villous; cauline lvs. 1-3, alternate; fls. 6-12; fl.-tube obconic below, densely pubescent; sepals ovate, acutish; petals white or pink, 6-10 mm. long, usually rather equally 3-lobed at apex, claw ca. 3 mm. long, inserted on calyx, stamens 10, yellow, inserted on calyx, ca. 3 mm. long, fils. exceedingly short; ovary 1-celled with 3 many-seeded parietal placentae, styles 3, unequal; fr. a caps.; seeds ovoid. -- Lower meadow on west side of Esperanza Creek. May.

Lithophragma parviflora (Hook.) Nutt. Woodland-Star.

Stems 1.5-2.5 dm. high, slightly glandular-pubescent; basal lvs. 1-3 cm. wide with short hairs, 3-5 cuneate divisions which may in turn be cleft; stem lvs. several, alternate; fls. 3-7; pedicels 2-5 mm. long; fl.-tube



elongate-obconic, hispidulous, 3-4 mm. long; sepals 5, deltoid, 1-2 mm. long; petals 5, white, 5-10 mm. long, deeply 3-5 cleft into linear-oblong lobes; stamens 10, included, the filis. short; ovary 1-celled; styles 3, unequal; fr. a caps.; seeds ovoid, horizontal. -- Shaded east bank of Esperanza Creek in lower meadow. June.

Peltiphyllum

Peltiphyllum peltatum (Torm.) Engl.

Stout fleshy plant, 5-10 dm. tall, lvs. 1-3 dm. across, 9-15 lobed, mostly glabrous; petioles 2-10 dm. long, glandular scabrous; scapes brownish-pubescent; sepals 3-4 mm. long, obtuse; petals broad, 5-7 mm. long, pink, oblong-ovate; stamens 10; carpels 2, distinct; follicles 8-11 mm. long, reddish in age. -- Rock out crop in Esperanza Creek in lower meadow. May.

Philadelphus

Philadelphus Lewisii Pursh ssp. californicus (Benth.) Munz.  
Mock-Orange.

Loosely branched, 1-3 m. high; young branches light brown, glabrous, older gray, 3-6 cm. long, entire, usually glabrous above, strigose on veins beneath; petioles mostly 3-6 mm. long; fl.-tube glabrous, 2.5-3.5 mm. long; sepals 5-6 mm. long, lanceolate, wooly along the margins; petals 9-15 mm. long, white, elliptic, 4 or 5; stamens many; ovary mostly inferior, 4-celled; styles united to near apex; caps. 1. mm. long; fls. sweet orange smelling. -- Steep eastern

bank of Esperanza Creek in lower meadow. June-July.

Ribes

Ribes amarum McClat. Bitter Gooseberry.

Erect, deciduous, 1-2 m. high, pubescent and glandular on young twigs, but not bristly, nodal spines ten, to 1 cm. long; lvs. roundish, with cordate base, 2-3 cm. wide, pubescent and glandular-puberulent above and beneath, 3-5 lobed, crenate; petioles glandular-pubescent, to ca. as long as blades; fls. 1-3, purplish, on glandular-pubescent peduncles; bracts broadly ovate; ovary densely bristly, free part of fl.-tube 5-6 mm. long, ca. half as wide; sepals pubescent, 7-9 mm. long; petals pinkish-white, almost as long as fls.; stamens ca. 1 cm. long, anthers apiculate; berry rounded, 1.5-2 cm. in diam., with short gland-tipped bristles 1-2 mm. long. -- West side of Esperanza Creek near fire pit. April-May.

ROSACEAE

Amelanchier

Amelanchier pallida Greene. Service-Berry.

Shrubs to 5 m. tall, with erect to spreading branches; bark glabrous, brownish-grey; lvs. oval to elliptic, puberulent on both surfaces, the lower paler than upper, the blades 2-4 cm. long, 1.5-2.5 cm. wide, acute to roundish at apex, with 7-10 pairs of pinnate veins, somewhat obscure, entire to toothed to or below the middle; petioles slightly

pubescent 5-10 mm. long; racemes corymbose, 2-4 cm. long, pubescent 5-7 fld.; sepals lanceolate, acuminate, 2-3 mm. long, densely villous on both sides; petals oval to obovate, 8-11 mm. long, 3-4.5 mm. wide; stamens ca. 20, styles mostly 3-4; fr. subglobose, purplish-black, 4-6 mm. in diam., the upper part of the fl.-tube constricted on the young fr. -- West bank of Esperanza Creek. May-June.

### Chamaebatia

Chamaebatia foliolosa Benth. Mountain Misery.

An erect shrub 3-8 dm. high, with numerous leafy branches, the young twigs glandular-hirsute and tomentose but soon exfoliating leaving a smooth dark brown bark; lvs. ovate to obovate in outline, 2-10 cm. long, 1.5-6 cm. wide, viscid, glandular-hirsute on the rachis and its branches, mostly thrice pinnate, the ultimate divisions elliptical, tipped with a small more or less stalked gland; fl.-tube ca. 4-5 mm. long, glandular-hispid; sepals ca. 4 mm. long, lanceolate; petals white, obovate, 6-8 mm. long; stamens numerous; pistil solitary; style terminal, villous at base; ak. obovoid, brown, 5-6 mm. long. -- Primarily the slopes of the upper meadow. May.

### Holodiscus

Holodiscus discolor (Pursh) Maxim. Cream Bush.

Shrub 2-4 m. high, with brownish exfoliating bark, young twigs more or less villous and tomentose; lvs. broadly ovate or oval, alternate, 4-8 cm. long, usually double-toothed,

acute at apex, truncate to cuneate at base, but scarcely or not at all decurrent on the petiole, glabrate above, tomentose below; infl. paniculate; hypanthium hemispheric; sepals 5, 3-nerved, erect in fr.; ovate-lanceolate; petals 5, white, broadly ovate, 2 mm. long; stamen ca. 20, borne on the disk lining the hypanthium, pistils 5, alternate with the sepals; ovules 2, pendulous; aks. minute, enclosed in the hypanthium. -- Shaded east bank of Esperanza Creek in the lower meadow. June-July.

### Potentilla

Potentilla grandulosa Lindl. Cinquefoil.

Perennial from a woody caudex; stems erect, 3-7 dm. high, leafy, viscid-villous, branching above, anthocyanous; basal lvs. pinnate, sparsely long-pubescent, glandular, darker green above; lfts. 5-9, obovate, 1.5-4 cm. long, serrate; stem-lvs. reduced; cyme open, many-fld.; fl.-tube glandular-hirsute, 4-8 mm. broad; bractlets ovate to linear, 4-7 mm. long; sepals lance-ovate, 6-9 mm. long; stamens ca. 25; pistils many; aks. brownish, veiny, ca. 1 mm. long. -- West bank of Esperanza Creek in lower meadow. May.

### Rubus

Rubus ursinus Cham. & Schlecht. California Blackberry.

Grayish mound-builder with running stems, primocanes pruinose, pubescent to nearly glabrous, with straight bristlelike prickles; lvs. of primocanes mostly 3-foliate, on bristly glandless petioles, the lfts. triangular-ovate

to ovate-pointed, the terminal one stalked, 5-12 cm. long, almost as broad, dentate to shallowly lobed; lvs. of flowering stems variable, the lower and middle mostly 3-foliolate, upper 3-lobed, smaller, usually more blunt than on primocanes, fls. 3-15, at or near the summit of lateral leafy shoots, perfect or imperfect, on prickly mostly glandless pedicels; petals of the male fls. narrow, to 15 mm. long, of female smaller; sepals tomentose, pointed, bristly, fr. oblong, black, slightly pilose, to 2 cm. long. -- East bank of Esperanza Creek in lower meadow. July.

#### LEGUMINOSEAE

#### Lathyrus

#### Lathyrus nevadensis Wats. Pea.

Perennials from rootstocks. pubescent, the stems erect, 2-4 dm. high, angled; stipules narrow, less than half as long as lfts.; lfts. 4-8, paired or scattered, linear to lanceolate, 1-4 cm. long; tendrils poorly developed, fls. 2-7, mostly pale blue, pinkish or lavender, 18-28 mm. long; calyx 6-10 mm. long, hairy, the teeth subequal, lanceolate, shorter than the tube; banner obcordate, strongly reflexed, the claw ca. as wide as blade; wings and keel usually paler than the banner; pods 4-7 cm. long, 4-8 mm. broad, glabrous. -- Primarily on west slope in canyon and lower meadow. April-May.

#### Lathyrus sulphureus Brewer ex Gray. Pea.

Perennial from taproots and branched crown, glabrous

except for the ciliate calyx-teeth; stems 0.5-3 m. tall, angled; stipules lanceolate, clasping, sometimes longer than lfts., dentate; lfts. mostly 8-10, narrowly ovate, 2-5 cm. long, the tendrils well developed; fls. 10-20, mostly secund, 10-15 mm. long, tan with orange tinge; calyx 7-10 mm. long, the 2 upper teeth deltoid, much shorter than the lower, narrower 3; banner with a very broad claw, keel much recurved; pods 3-7 cm. long, 4-7 mm. wide, glabrous. -- East slope of upper meadow. May-June.

### Lotus

Lotus humistratus Greene. Bird's Foot Trefoil.

Annual with decumbent to ascending stems 1-3 dm. long, villous; lfts. 3-5 obovate, entire 7-15 mm. long; fls. subsessile, solitary, in fl-axils; calyx lobe ca. twice as long as calyx tube; corolla yellow, tinged with red-purple in age, 5-8 mm. long; pods 5-10 mm. long, ca. 3 mm. wide, compressed, densely villous; seeds ca. 1.5-2 mm. long, notched at hilum, smooth. -- East slope in upper meadow. May.

Lotus pinnatus Hook. Bird's Foot Trefoil.

Glabrous perennial, rather stout, 2-4 dm. tall; stipules scarious, narrowly ovate; lfts. 5-9, obovate, 1-2.5 cm. long; peduncles 5-10 cm. long, exceeding the lvs.; bract inconspicuous to absent; fls. 4-7; calyx-tube ca. 5 mm. long, the lower teeth subulate, 2-3 mm. long, the upper shorter; corolla 12-15 mm. long, banner and keel yellow, the wings

white; pods 4-6 cm. long, ca. 2 mm. wide; seeds oblong, several. -- Lower meadow along west bank of Esperanza Creek. May-June.

Lotus purshianus (Benth.) Clem. & Clem. Bird's Foot Trefoil.

Erect or ascending much-branched annual, 2-6 dm. high, glabrous to villous; lvs. 1.5-3 cm. long, the terminal petiolate; peduncles 5-10 mm. long, 1-fl'd.; bract 1-foliate; calyx-tube ca. 1.5 mm. long, the subulate teeth longer; corolla cream tinged with rose, 5-8 mm. long; pods 1.5-2.5 cm. long, 2-3 mm. wide, glabrous, deflexed; seeds oblong, smooth, dark brown, ca. 3 mm. long. -- Base of road leading north from lower meadow. August.

Lotus subpinnatus Lag. Bird's Foot Trefoil.

Annual, the stems diffusely branched, decumbent, 5-20 cm. long, glabrous to strigose; lfts. 3-5, narrowly to broadly obovate, entire, 5-15 mm. long, strigose or pilose; fls. subsessile; calyx 4 mm. long, the teeth about equal to the tube; corolla yellow, tinged reddish-purple in age, 5-6 cm. long, keel alternately beaked; pods 1-1.5 cm. long, 3 mm. wide, rather sparsely appressed-pubescent. -- West slope of upper meadow. April.

### Lupinus

Lupinus bicolor Lindl. ssp. microphyllus (Wats.) D. Dunn.

Lupine.

Annual, the stms. 1-several from base, erect, 1-4 dm. tall, villous throughout; petioles 2-6 cm. long; lfts. 5-7 oblanceolate, 1-3 cm. long; peduncles 3-7 cm. long; racemes

2-5 cm. long; fls. in 1-9 whorls; pedicles 1.5-3 mm. long; bract subulate, deciduous, 4-6 mm. long; upper calyx-lip 2-4 mm. long, the lower 3-toothed, 4-6 mm. long; petals blue, the banner with white spot near center and 6-9 mm. long by 5-8 mm. wide, oblong, truncate; keel slender, acute, ciliate along upper edges of slender beak; pods strigose, 1.5-2 cm. long, 4-6 mm. wide; seeds 5-8, pale to pinkish, 2-3 mm. long. -- West slope of river valley. May.

Lupinus grayi (Wats.) Wats. Lupine.

Stems several from a branched woody root crown, ascending to decumbent, 2-4 dm. long, densely grayish-tomentose and somewhat villous; lvs. mostly basal, the petioles 5-12 cm. long; lfts. 5-11, oblanceolate, 2.5-3.5 long, 5-7 mm. wide, acute, tomentose; peduncles 7-18 cm. long; racemes 10-15 cm. long with subverticillate fls. 12-14 mm. long; bracts 4-5 mm. long, early deciduous; pedicles 2-4 mm. long; upper calyx-lip deeply 2-toothed, 5-7 mm. long, the lower entire, slightly longer; petals lavender to white, the banner roundish, glabrous to slightly pubescent on back, with a yellow center, the keel not strongly curved, densely ciliate on upper edges, somewhat ciliate on lower edges near base; pods strigose, 2.5-3.5 cm. long; seeds 4-6, obscurely mottled and with dark lateral lines. -- Along west slope of lower meadow. May.

Lupinus vallicola Heller. Lupine.

Plants 1.5-4 dm. high; lfts. mostly 7-9, linear, 1.5-2.5 cm. long, 2-4 mm. wide; peduncles 3-8 cm. long; racemes 3-10 cm. long, fls. in fairly well separated whorls;



pedicels slender, 4-5 mm. long; upper calyx-lip ca. 2 mm. long, the lower ca. 4 mm. long; fls. 6-10 mm. long, bright blue; banner wider than long, with a cent. pale spot and the apex not much reflexed from the upper margins of wings, keel usually strongly curved, ciliate above toward apex; pods 1.5-2.5 cm. long, 4-5 mm. wide, silky; seeds 3-6, pale, flesh-colored, scarcely mottled, ca. 2.5 mm. long. -- West slope in upper meadow. May.

### Medicago

Medicago hispida Gaertn. var. hispida Bur-Clover.

Subglabrous annual, branched from the base, the stems procumbent, 1-4 dm. long, petioles 1-3 cm. long; lfts. obovate, 8-15 mm. long, sharply denticulate; stipules deeply divided with long needle-like teeth; peduncles slender, 5-25 mm. long, 2-5 fld.; fls. 4-5 mm. long, yellow; the calyx sparsely villous; pods coiled 2-3 times, 4-6 mm. in diam., glabrous, with 2-3 rows of spines arising from a raised ridge and without any furrow between the rows, the spines usually hooked. -- Primarily located along northern perimeter of upper meadow. April-May.

Medicago hispida Gaertn. Var. confinis. Bur-Clover.

Pods with short knobs instead of prickles. -- With the typical variety along the northern perimeter of the upper meadow.

### Melilotus

Melilotus albus Desr. Sweet Clover.

Annual with erect stems, 1-2 m. high, glabrous or finely pubescent; lvs. petioled, with pinnately 3-foliolate lvs.; lfts. oblong-ob lanceolate, truncate, 1-2 cm. long, serrate; peduncles commonly 3-5 cm. long; racemes numerous, slender, 5-10 cm. long; calyx teeth subequal; petals white, 4-6 mm. long, banner obovate; wings oblong; keel obtuse; stamens diadelphous; pods ovoid, glabrous, ca. 3 mm. long, 1-2 seeded. -- Open area in lower meadow.

August-September.

### Trifolium

#### Trifolium gracilentum T. & G. Clover.

Mostly glabrous annuals, stems slender, erect to procumbent, 1-4 dm. long, petioles commonly 2-7 cm. long; stipules lance-ovate, entire, 8-10 mm. long; lfts. obovate, 0.5-1.2 cm. long, serrulate, emarginate at apex; peduncles slender, mostly 2-6 cm. long; heads 6-8 mm. long; pedicels 1-3 mm. long, reflexed in age; calyx-teeth subulate-lanceolate, entire, shorter than the corolla; petals pink, 5-6 mm. long, not conspicuously veined; pods ca. 5 mm. long, 1-2 seeded. -- Throughout property. May.

#### Trifolium wormskioldii Lehm. Clover.

Glabrous perennial with creeping rootstocks and branched decumbent stems 1-3 dm. long; stipules lanceolate, lacinate-toothed; petioles 2-5 cm. long; lfts. oblanceolate to wider, 1-3 cm. long, mucronulate to obtuse, setulose-serrulate; peduncles mostly 1-5 cm. long; invol. 12-15 mm. broad, flattish, lobed and then toothed; calyx

10-nerved, ca. 7-9 mm. long, the teeth subulate, longer than the tube; corolla ca. 12 mm. long, the banner broad, white to light purple, the wing and keel dark purple; pods ca. 7 mm. long, 2-6 seeded. -- Throughout property. April-May.

### Vicia

Vicia americana Muhl. ssp. oregana (Nutt) Abrams. Veatch.

Trailing or climbing perennial, glabrous, 6-12 dm. tall; stipules incisely toothed; lfts. 4-8 pairs, oblong-elliptic, rounded at apex, mucronulate, 1-4 cm. long, subglabrous; peduncles shorter than lvs., 4-9 fld.; calyx lanceolate, slightly unequal, teeth shorter than the tube; corolla 16-20 mm. long, pink to purple aging blue, keel white; pods glabrous, 3-4 cm. long, 7-9 mm. wide; seeds several, dull black, ca. 4 mm. in diam. -- East slope of upper meadow. May-June.

Vicia americana Muhl. var. truncata (Nutt.) Brew. Veatch.

Lfts. of upper lvs. truncate at apex and few denticulate. -- Found with ssp. oregana on east slope of upper meadow. May-June.

## BETULACEAE

### Alnus

Alnus rhombifolia Nutt. White Alder.

Tree 10-35 m. high with gray-brown bark; lvs. oblong-ovate, apically rounded to acute, basally cuneate, finely serrate, dark green and slightly pubescent above, lighter

green and puberulent below, 5-10 cm. long, on petioles 1-2 cm. long; male catkins 2-several in a cluster, 4-8 cm. long; female catkins 1-2 cm. long, the scales thickened and lobed at apex; nutlets with thin narrow margins. -- Along banks of Esperanza Creek. Specimen with frs. collected in October.

### Corylus

Corylus cornuta March. var. californica (A. DC.) Sharp.

Hazelnut.

Open spreading shrub 3-6 m. high with smooth bark, the glandular-pubescent branchlets glabrate in age; lvs. rounded to ovate, cordate at base, 4.5-7 cm. long, doubly serrate, pale beneath, soft-pubescent, glabrate in age; bracts of male catkins pubescent, anthers pubescent at apex, female fls. several from a scaly bud, 2 to each bract, with 2 bractlets, calyx adherent to ovary; style short; stigmas 2, elongate, bright red; invol. hispid, forming a tube 1.5-2.5 cm. long; nut ovoid, 1.2-1.5 cm. long. -- East bank of Esperanza Creek. Specimen with fls. collected in July.

### FAGACEAE

### Quercus

Quercus chrysolepis Liebm. Canyon Oak.

An evergreen, round or spreading tree 6-15 m. high, with pale gray rather smooth scaly bark and hoary-tomentose young twigs; lf. blades coriaceous, yellowish-tomentose beneath usually oblong, entire to spinulose-dentate, plane,

3-8 cm. long; petioles 5-14 mm. long; staminate fls. solitary in axils of cauducuous bracts, the calyx 6-lobed; stamens 5-12; pistillate fls. solitary in many-bracted involvs., in upper axils; calyx urn-shaped, adnate to the 3-celled inferior ovary; styles 3; acorns oblong-ovoid, 2.5-3 cm. long, 1.2-1.8 cm. in diam., the scales mostly hidden by the feltlike tomentum, maturing in second season. -- Lower meadow and slopes in canyon. Collection with frs. in October.

Quercus kelloggii Newb. California Black Oak.

A deciduous tree with broad rounded crown, 10-25 cm. high, trunk thick, with smooth bark that divides into ridges with age; young twigs subglabrous; lf. blades obovate in outline, deeply lobed into ca. 3 main divisions on each side, each lobe with 1-5 coarse bristle-tipped teeth; bright green and slightly stellate pubescent above, paler and stellate pubescent below when young, 1-2 dm. long; petioles 3-5 cm. long; male catkins 3.5-7.5 cm. long; stamens 5-9; female fls. single or several on a peduncle; acorn maturing in the second year, oblong, ca. 3 cm. long, 1.8 cm. thick, pubescent; cups 1.5-2.5 cm. deep, 2-3 wide, scales thin and membranous. -- Slopes throughout property. Collection in October.

JUGLANDACEAE

Juglans

Juglans hindsii (Jeps.) Jeps. Walnut.

Tree, 15-20 m. high; young twigs brownish-tomentose; old bark dark, with broad irregular ridges; lvs. pinnately 2-3.5 dm. long, the petioles glandular-pubescent; lfts. 13-19, finely serrate, cuneate or rounded at base, glabrous above, with hairy tufts beneath in vein-axils; bracteate male aments 5-9 cm. long, brownish-pubescent; staminate fls. with 10-40 stamens, in 2 or more series; pistillate fls. 1-several with a 4 lobed calyx, fr. roundish 3.5-5 cm. in diam., with dark brown pubescent husk; nut globose, thick-shelled, with faint longitudinal grooves. -- Central portion of the upper meadow, probably planted. Collected in June and October.

#### ONAGRACEAE

#### Clarkia

Clarkia purpurea (Curt.) Nels. & Macbr. ssp. viminea  
(Dougl.) Lewis & Lewis.

Stems erect, 1-5 dm. high, mostly simple, glabrous below, puberulent above with upwardly spreading hairs; lvs. linear to lance-linear 2.5-5 cm. long, less than 1/6 as broad; infl. lax; fl.-tube 3-7 mm. long, with inner ring of hairs on lower third, pilose without; sepals lanceolate 8-12 mm. long, puberulent, reflexed individually; petal entire obovate 1.5-2.5 cm. long, lavender to purple, with a darker spot in the upper part; stigma lobed to subglobose, caps. quadrangular, 1-2 cm. long, 3-4 mm. broad, long pubescent, 8-ribbed, rounded at base; seeds brown, 1-2 mm. long, well

crested at summit. -- Primarily on east slope of upper meadow. May-June.

Clarkia virgata Greene.

Erect, simple or few-branched, 2-8 ta., puberulent above with upcurled hairs; lvs. few, subopposite, lanceolate, 2-6 cm. long, 2-5 mm. wide, acute, entire, with petioles 1-2.5 cm. long; infl.-rachis recurved, erect at anthesis; fl.-tube 1-3 mm. long; with white hairs at summit; sepals green, distinct at anthesis, 10-15 mm. long; petals 7-14 mm. long, narrow, purple to dark lavender, claw broad, with a pair of projections near the base, anthers red-purple; caps. quadrangular, 1-2.5 cm. long, 2-2.5 mm. broad, with a beak 2-3 mm. long; stem becoming erect before the fls. open; seeds gray ca. 1 mm. long. -- East bank of Esperanza Creek in lower meadow. June-July.

Clarkia williamsonii (Dur. & Hilg.).

Erect 3-10 dm. high, simple or branched, puberulent above with short upwardly curled hairs; lvs. linear, subentire 2-5 cm. long, 2-5 mm. wide, not crowded, puberulent, sessile to short-petioled; infl. not congested, erect; buds erect; fl.-tube 7-15 mm. long, the hair ring in the lower third; sepals lanceolate 8-16 mm. long, reflexed individually or in pairs; petals cuneate, entire to emarginate, 1.5-3 cm. long, lavender near both ends, white near middle with a purple spot in the upper half; anthers pale to lavender; stigma purplish; immature caps. 1-3 cm. long, 4-5 mm. broad, 8-ribbed, subsessile, beak less than 2 mm. long; seeds brown, 1-1.5 mm. long, the crest short. -- Roadside in upper

meadow. July.

Heterogaura

Heterogaura heternadra (Torr.) Cov.

Erect, stem simple or paniculately few branches, 2-4 dm. tall, minutely puberulent throughout; lvs. oblong-ovate to lanceolate, entire to remotely denticulate, the blades 3-6 cm. long, 1-2 cm. wide, on petioles 0.5-1 cm. long; pedicels 1-1.5 mm. long; fl. tube 2-4 mm. long; sepals ca. the same; petals pink, aging lavender, spatulate, 3-5 mm. long; stamens 8, alternately fertile, 2 mm. long; fils. not appendaged; stigma discoid, entire; ovary 4-loculed, one ovule per locule; caps. ridged, 3 mm. long; seeds slender, 2 mm. long. -- Open area of lower meadow. June.

ARISTOLOCHIACEAE

Asarum

Asarum Hartwegii Wats. Wild Ginger.

Rootstocks rather closely scaly, stout, lvs. basal, persistent, cordate, ovate, 8-15 cm. long, somewhat acute, pubescent below, glabrous above; petioles 1-2 dm. long, wooly; pedicels 2-3 cm. long; calyx regular, 3 parted, brownish-red, hairy outside, pubescent within, the lobes 2.5-6 cm. long; styles shorter than stamens, stamens 12; terminal appendages of anthers longer than pollen sacs; seeds compressed, ca. 4 mm. long. -- Steep slope on east side of Esperanza Creek. May-June.



## RHAMNACEAE

Ceanothus

Ceanothus cuneatus (Hook) Nutt. Buck Brush.

Rigid shrub, 1-3 m. tall; lvs. on spur-like branchlets, cuneate-obovate to spatulate, mostly obtuse, entire, finely tomentulose beneath, gray-green and glabrous above, firm, 0.5-1.5 cm. long, place; fls. white, umbellate; caps.

subglobose, 5-6 mm. broad with short erect horns near top, seeds shining, black, round-oblong, ca. 4 mm. long. --

Along west slope leading from upper meadow to lower meadow. April-May.

## LORANTHACEAE

Arceuthobium

Arceuthobium campylopodum Engelm. in Gray. Dwarf Mistletoe.

Staminate plant stout, dioecious, dichotomously branched, 6-12 cm. high, greenish-yellow to brown; the pistillate plants often taller but usually more slender and darker; spikes of the staminate fls. 2 to a joint, the pairs well separated or sometimes crowded, simple, mostly over 1 cm. long, 2.5-3 mm. thick, with mostly 7-8 joints; calyx-lobes of the staminate fls. 4, rarely 3 or 5, oblong-ovate, acutish, about 3 mm. long; fr. 4-5 mm. long, bluish, drooping on the curved pedicels. -- On Pinus ponderosa throughout property, common parasite.

Phoradendron

Phoradendron flavescens (Pursh) Nutt. var. villosum (Nutt.) Engelm. in Rothr. Mistletoe.

Plants stout, dioecious, 3-6 dm. high, the internodes 3-5 cm. long, densely short villous; lvs. thickish narrow-obovate to roundish, obtuse, 1-5 cm. long, densely villous, cuneately petioled; spikes 1.5-5 cm. long, short-villous to glabrate, the male 20-30 fld., the female ca. 6 or 12-fld.; fr. white or tinged with pink, globose, 4-5 mm. in diam.

-- On Quercus throughout property.

#### ACERACEAE

##### Acer

Acer macrophyllum Pursh. Big-Leaf Maple.

Round-topped tree 5-20 m. tall with brownish glabrous twigs; lvs. roundish in outline, 1-2.5 dm. in diam., deeply (3)-5-parted into coarsely, irregularly, few-toothed lobes, paler and more pubescent beneath; petioles commonly 5-12 cm. long; male and perfect fls. in the same raceme; sepals; and petals ca. 3 mm. long, greenish-yellow; stamens 7-9, villous near base; samaras variable, the body stiff-hairy, the wings 2-4 cm. long, diverging at an acute angle. -- Along banks of Esperanza Creek and in lower meadow and canyon. May-June.

#### ANACARDIACEAE

##### Rhus

Rhus diversiloba T. & G. Poison Oak.

Erect shrub, bushy 0.5-3 m. tall, stiffly branched,

subglabrous; lvs. pinnately 3-foliolate, the lfts. obtuse, usually crenulate or even lobed, roundish to ovate, 2-7 cm. long, bright green and shining above, paler beneath; panicles axillary, racemose; petals of male flowers 3-4 mm. long, of female 2-3 mm.; fr. whitish, glabrous, subglobose, 4-7 mm. thick; seeds flattened, 3-6 mm. long, irregularly roughened. -- Primarily on steep slope on east side of Esperanza Creek. Poison Oak - contact frequently causes skin irritation. May.

#### UMBELLIFERAE

##### Anthriscus

Anthriscus scandicina (Weber) Mansf. Bur-Chervil.

Annual, hispid throughout, stems slender, branched, 3-7 dm. tall; lvs. pinnately decomposed, stipules ciliate, petioles sheathing; infl. of loose compound umbel-rays mostly 3-6; invol. of 0-3 bracts; involucl of several lanceolate bractlets, 2-5 mm. long; pedicels 2-10 mm. long; sepals none; fls. white; stylopodium conic; styles short; fr. ovoid, ca. 4 mm. long, muricate with short hooked bristles. -- Northern slope of upper meadow. April.

##### Lomatium

Lomatium utriculatum (Nutt.) Coult. & Rose.

Caulescent, from a long slender taproot; 1-5 dm. tall, purplish below, glabrous, lf.-blades oblong in outline, 3-12 cm. long, tripinnate into linear segms. 4-25 mm. long;

petioles 1-6 cm. long; bractlets obovate, entire to cleft, green to purplish, scarious on margins; rays 5-13, spreading to ascending, 2-10 cm. long; pedicels 2-9 mm. long; umbellets ca. 20 fld.; fls. yellow; fr. ovate to oblong, 5-10 mm. long, puberulent when young, the wings thin; usually broader than body; oil tubes 1-3 in dorsal intervals, 1-4 in lateral, 2-6 on commissure. -- East slope at southern end of upper meadow. April.

### Osmorhiza

Osmorhiza brachypoda Torr. Sweet-Cicely.

Plants rather stout, 3-8 dm. high, short-pilose; lvs. ovate or deltoid, 8-20 cm. long, ternately-pinnate; lf.-divisions ovate, 2-6 cm. long, coarsely serrate, incised and pinnately lobed toward the base, pilose or strigose; petioles 0.5-2 dm. long; involucels 2-10 mm. long, of several bractlets; bractlets lanceolate, ciliate, spreading, exceeding the pedicels; rays 2-5, spreading-ascending, 2.5-10 cm. long; pedicels ascending, 1-3 mm. long; fls. greenish-yellow; sepals obsolete; stylopodium conical; styles ca. 0.5 mm. long; stamen 5; fr. oblong-fusiform, 12-20 mm. long, tapering into a narrow beak at apex, caudate at base, short-hispid on the conspicuous ribs. -- East slope of upper meadow. Collected in fr. in July.

### Sanicula

Sanicula bipinnatifida Dougl. ex Hook. Purple Sanicle.

Stems rather stout, 2-6 dm. high, from a thickened

often branched taproot-crown; basal lvs. several, polymorphic, the blades usually 3-7 parted, 5-10 cm. long, the divisions deeply wing; umbels irregularly compound, 3-5 rayed, the bracts leaflike; involucrel-bractlets 3 mm. long, lanceolate, 6-8; fls. purple or yellow; frs. 5-10 sessile, ovoid to subglobose, 3-6 mm. long, covered with stout inflated prickles; seed-face broadly concave. -- Throughout property. April-May.

## CORNACEAE

### Cornus

Cornus nuttallii Aud. Mountain Dogwood.

Arborescent bush or tree 5-15 m. tall; twigs at first green, later dark red to almost black, strigulose; lfs. simple, blades 5-12 cm. long, 3-7 cm. broad, obovate, cuneate at base, apex acute, minutely strigulose above, paler beneath and pubescent with appressed hairs, petioles 5-10 mm. long; infl. appearing in autumn, subtended by 2 lvs. and 2 bracts that persist until spring; at anthesis the head of fls. subtended by 4-7 white petaloid bracts 4-5 cm. long, 3-4 cm. wide, fls. 4-merous, greenish-yellow; calyx 3 mm. long, petals 4 mm. long, style 2 mm. long; drupes red 1-1.5 cm. long. -- East bank of Esperanza Creek. May.

## RUBIACEAE

### Galium

Galium asperrimum Gray. Bedstraw.

Perennial from slender rootstocks; stems weak, 3-8 dm. long, freely branching above, retrorse-hispid on angles; lvs. mostly in whorls of 6, sometimes 8, narrow-lanceolate to linear, acute, abruptly mucronulate, 1.2-3 cm. long, hispid on margins and midribs, fls. in a diffuse terminal or axial leafy infl., on capillary pedicels; corolla white, 2.5-3.5 mm. across; fr. small with very short hooked bristles, the pedicels somewhat clavate at summit. -- Primarily throughout upper meadow. April-May.

#### CAPRIFOLIACEAE

##### Lonicera

Lonicera ciliosa (Pursh.) Poir. Honeysuckle.

Trailing or climbing deciduous shrub, 1-3 m. long; lvs. entire, elliptic to oval, mostly obtusish, 3-8 cm. long, glabrous and green above, glaucous and pilose beneath, ciliate, on petioles 3-5 mm. long; fls. in a single terminal whorl, which is subsessile; corolla yellow to red-orange, narrow-funnelform, 2-3 cm. long, swollen on one side at base, slightly 2-lipped, the lobes ca. half as long as tube; stamens 5, adnate to corolla tube; ovary 2-3 locules; fr. a fleshy berry, red, ca. 5-6 mm. in diam. -- Primarily on the west side of Esperanza Creek in the lower meadow. June-July.

#### VALERIANACEAE

##### Plectritis

Plectritis ciliosa (Greene) Jeps.

Slender, 1-4 dm. tall. lvs. obovate to oblong and 3-4 times as long as wide; calyx obsolete; corolla spurred, 5-7 mm. long, deep pink, bilabiate with a dark red dot at the base on either side of the middle lobe; spur slender, at least as long as tube; fr. 2-3 mm. long, pubescent, the wings sharply inrolled, thick, narrow, forming a narrow-elliptic opening on the concave side. -- East slope of upper meadow. April.

## CUCURBITACEAE

Marah

Marah fabaceus (Naud.) Greene var. agrestis (Greene)

Stocking. Wild Cucumber.

Stems 2-6 m. long, subglabrous; lvs. suborbicular, 5-8 cm. broad, deeply 5-7 lobed, the lobes less than half the lf-length, mostly acute at apices, the basal sulcus 1-3 cm. deep; petioles 3-6 cm. long; male fls. 8-25 in a raceme; pedicels 3-6 mm. long; male corolla rotate, 7-12 mm. in diam., mostly cream; female 10-15 mm. in diam., the lobes unequal; fr. globose below, tapering to a tip, 4-5 cm. in diam., with soft spines less than 5 mm. long; seeds mostly 1-3, asymmetrical, 18-24 mm. long, 12-15 mm. thick, tan. -- East bank of Esperanza Creek along shaded slope. May.

## CAMPANULACEAE

Githopsis

Githopsis pulchella Vatke!

Annuals with slender stems, simple or divergently branched, 1-2 dm. high, glabrous or setulose along angles; upper lvs. oblong-linear, serrulate, 5-14 cm. long, the lower withering by anthesis, sepals subulate, 7-15 mm. long, corolla campanulate, 15-22 mm. long, the lobes deep blue-lavender, shortly acute; caps. broadest above the middle, ribbed, glabrous or retrorse-pubescent; seeds brown, shining, ca. 1 mm. long. -- Roadside at southern end of upper meadow! June!

## COMPOSITAE

AchilleaAchillea millefolium L. Yarrow!

Perennial aromatic herbs with creeping rootstocks; stems simple, 4-10 dm. high, arachnoid to glabrescent; cauline lvs. many, loosely pubescent, bipinnately parted and dissected into fine segms.; lower lvs. 1-2 dm. long, petioled, the upper sessile, linear, oblong; primary divisions ovate in outline, divaricate; rachis winged, 1-2 mm. broad; ultimate divisions linear, spinulose-tipped; heads many, in corymbiform panicles; invol. 5-6 mm. high, villous; phyllaries ca. 20 in 4 series, the outer ovate, obtuse, ca. half as long as the innermost, margins light brown; rays usually 5, white, round, 2.5-3 mm. long; disk-fls. 15-50, white; aks. 2 mm. long with thick winged margins; pappus none. -- Primarily in the upper meadow! June-July!



Agoseris

Agoseris heterophylla (Nutt.) Greene. Mountain Dandelion.

Slender erect annuals, 5-20 cm. tall, pubescent, sometimes with several scapes from the base; lvs. ascending, linear, entire to sinuate, 2-7 cm. long, in a basal cluster; invol. campanulate, 5-15 mm. high, sparsely villous; phyllaries lance-acuminate, commonly in 2 length-classes, with septate twisted trichomes, some of these purplish and gland tipped; ligules scarcely to conspicuously exerted, yellow, 2.5-6 mm. long; anther-tubes 1.0-1.7 mm. long; outer aks. polymorphic, acutely 10-ribbed, glabrous or hispid, whitish to purple, 3-5 mm. long; beak capillary, mostly 6-10 mm. long; pappus 4-7 mm. long. -- East slope of upper meadow. May.

Agoseris retrorsa (Benth.) Greene. Mountain Dandelion.

Perennial, the stout scapes 2-5 dm. tall; herbage woolly pubescent when young, somewhat glabrate in age; lvs. narrow lanceolate, 1-3 dm. long, pinnately parted into linear or lanceolate retrorse segms., the terminal one very long; invol. 2.5-4 cm. high, the phyllaries in 2 sets; ligules; yellow, exceeding the invol.; aks.-body 5-7 mm. long, truncate at the apex and narrowed suddenly into the nonstriate beak that is 2-4 times as long; pappus-bristles 10-16 mm. long. -- Open area in lower meadow on west side of Esperanza Creek. May-June.

Anthemis

Anthemis Cotula L. Dog-Fennel.

Ill-smelling annual, 1-5 dm. high, branched, subglabrous; lvs. mostly 2-6 cm. long, 2-3 pinnatifid into very narrow segments; heads several to many, radiate, 1.5-2 cm. across; rays white, 8-10 mm. long, sterile, emarginate, disk-fls. yellow, 4-6 mm. long; phyllaries subequal, margins hyaline, acute; aks. subterete, ca. 10-ribbed; pappus none. -- Throughout upper meadow. July.

AsterAster chilensis Nees. Aster.

Stems erect or ascending, 4-10 dm. high, paniculately branching above, uniformly pubescent at summit of peduncles; lvs. entire, sometimes rough above, glabrous beneath, narrow, 3-8 cm. long, 3-10 mm. wide, the midcauline linear-lanceolate, sessile, the upper crowded, becoming bractlike; infl. mostly paniculate; heads 1-2 cm. across, usually numerous, invol. 5-7 mm. high, 4-5 seriate, stringly graduate; phyllaries ciliolate, glabrous on back, green-tipped, narrow-oblong, the outer mostly obtuse, the inner abruptly acute; rays 20-25, violet to purple, 8-12 mm. long; disk fls. yellow aks. hairy or glabrous; pappus of subequal, capillary, persistent bristles. -- East slope of upper meadow. August.

Aster occidentalis (Nutt.) T. & G. Aster.

Stems from a slender branching caudex, 3-5 dm. high, reddish-brown, glabrous below, slightly pubescent above; lvs. entire, persistent, linear, 2-5 cm. long, the basal with

narrowly winged ciliate petiole, the middle cauline 3-8 mm. wide, sessile; heads 1-several, in a cymose panicle; invol. 5-9 mm. high, slightly graduated; phyllaries linear, acute, often purple tipped but seldom purple margined, glabrous on the back; rays 20-30, lavender to violet, 7-10 mm. long; disk-fls. yellow to 8 mm. long aks. hairy; pappus of subequal, capillary, persistent bristles. -- East side of dirt road just south of upper meadow. October.

Calycadenia multiglandulosa D. C. ssp. robusta Keck.

Rosin Weed.

Stems stout, 3-10 dm. high, strict, simple, leafy throughout, glabrous below, puberulent to villous and often crisp-pubescent above, quite viscid; herbage dark green, pungently odorous, lvs. long, rigid, 6-15 mm. long, the floral ones tending to exceed the heads and recurve, scabrous, hispid-ciliate toward base; heads aggregated in axillary or apical glomerules, invol. 5-6.5 mm. high, with prominent honey-colored glands; ray-fls. 2-5, the ligules white, tinged with rose, 5-7 mm. long, 9-12 mm. wide; disk-fls. 5-12, yellowish; ray aks. with nearly central terminal areola; disk aks. angular, usually with a paleaceous pappus. -- Throughout property, especially abundant in upper meadow. August.

Centaurea

Centaurea melitensis L. Tocalote.

Annual 3-7 dm. high, erect, usually much branched, grayish-pubescent, the stems winged by the decurrent lvs.;

basal lvs. lyrate, 5-10 cm. long, with obtuse lobes; upper lvs. narrow, entire to slightly dentate; heads solitary or 2 or 3 together; invol. ovoid, 1-1.5 cm. high, arachnoid, the phyllaries rigid, the outer with palmatifid spining, the middle and inner pinnately arranged with the terminal spine 5-9 mm. long; fls. yellow; aks. ca. 2.5 mm. long, grayish, with pappus bristles in ca. 3 rows. -- Northern end of upper meadow. July.

### Cirsium

Cirsium vulgare (Savi) Ten. Bull-Thistle.

Coarse biennial, spreading, 0.5-2 m. tall; rosette-lvs. oblanceolate, coarsely toothed; cauline lvs. lanceolate, to 3 dm. long, deeply pinnatifid into lanceolate lobes, green and hirsute above, armed with long fierce prickles, tomentose beneath; lf.-bases decurrent on stem as long interrupted prickly wings; heads 1-few; invol. ovoid, 3-5 cm. high, the phyllaries mostly lanceolate to linear, attenuate to subulate-acerose, spreading; fls. discoid, purple, well exserted; aks. glabrous, flattened, 4-many nerved; pappus of plumose bristles. -- Throughout the upper meadow. July-August.

### Grindelia

Grindelia camporum Greene. Gum Plant.

Several glabrous herbaceous stems from the woody caudex, 5-12 dm. high, simple or openly branched, glabrous or nearly so; lvs. glabrous or scabrous, rarely more hairy,

subcoriaceous, very resinous, saliently dentate, narrowly oblong to broadly oblanceolate, the cauline 2-8 cm. long, 7-15 mm. wide; heads terminal, 2.5-4 cm. across, strongly and translucently resinous, the green tips of the multiseriate elongate phyllaries strongly recurved or hooked; receptacle flattish; ray-fls. 10-40 uniseriate, yellow, 8-15 mm. long; disk-fls. yellow; aks. subquadrangular, to compressed, glabrous; pappus of 2-8 stiff paleaceous awns. -- Upper meadow and its slopes. July-September.

### Hypochoeris

Hypochoeris glabra L. Cat's Ear.

Annual with a slender taproot; stems solitary or commonly several, erect or somewhat decumbent, simple or sometimes corymbosely branched, 1-3 dm. high, glabrous, bracteate; lvs. spreading on the ground, denticulate to pinnatifid, oblanceolate to oblong-lanceolate, 2-10 cm. long, glabrous with ciliate margins; invol. campanulate, 10-16 mm. long; ligules scarcely exceeding the phyllaries, yellow; aks. dark brown, the outermost beakless, the others with slender beaks as long as the body, 10-ribbed; pappus with a single row of plumose bristles, ca. 1 cm. long. -- East slope at southern end of the upper meadow. May.

### Lessingia

Lessingia virgata Gray.

Plants 3-7 dm. high, fastigiately few-branched above

the base or in the upper part, the divergent branches rigidly virgate, rather closely and uniformly clothed with oblong appressed lvs., 1-2.5 cm. long, acute, usually entire, slightly concave, densely but loosely wooly, or the lower side becoming glabrate, disclosing punctate glands; basal lvs. linear-oblongate, petiolate, to 3 cm. or so long, deciduous before anthesis; heads 3-6 fld., spicately sessile in the axil of a lf.; invol. 6-8 mm. high, wooly; corollas lavender, discoid; aks. turbinate, silky villous; pappus of numerous unequal usually distinct capillary bristles. -- Throughout the upper meadow. September.

Madia

Madia elegans D. Don ssp. densifolia (Greene) Keck.

Tarweed.

Stem stout, branching above middle to form a corymbose panicle, 3-10 dm. high, strongly glandular pubescent above; basal lvs. forming a small rosette or absent, the lower cauline usually imbricate, densely villous to hirsute, the upper scattered, smaller, strongly glandular-pubescent; invol. hemispheric, broad, to 12 mm. high, the attenuate tips of the phyllaries often exceeding the basal portion; ray-fls. 12-20, the ligules 1-2 cm. long, yellow with a maroon blotch at the base; disk-fls. always yellow; anthers dark purple; aks. usually laterally compressed, with flat sides, narrow back, and sharp ventral angles; pappus usually none in ray aks., sometimes present in disk aks. -- East

slope of upper meadow. August.

Madia elegans D. Don ssp. vernalis Keck. Tarweed.

Stems simple, 3-8 dm. high, the herbage densely hispid or pilose, sparingly glandular below the infl., basal rosette scarcely developed, the cauline lvs. scattered; invol. campanulate to hemispheric, to 1 cm. high; phyllaries completely enclosing the ray aks.; fls. all yellow, ray fls. 8-16 the ligules 6-15 mm. long, each with 3 deeply divided lobes, disk-fls. 25 or more; anthers purple-black; ray aks. usually laterally compressed, with flat sides, narrow back, and sharp ventral angle; pappus usually not present. --

West slope of the lower meadow. May-June.

Madia gracilis (Sm.) Keck. Gumweed.

Stems 1-6 dm. high, usually slender, simple or branching from the middle, the branching not overtopping the main stem, herbage resinously fragrant, lvs. not very crowded, mostly linear, sessile by a narrow base, to 8 cm. long and 5 mm. wide; heads racemose, not congested, the leafy bracts rarely prominent; invol. ovoid, 6-10 mm. high; phyllaries with stout gland-tipped hairs, the acuminate tips short; ray-fls. 8-12; ligules 3-8 mm. long; disk-fls. 20-30; anthers included, black; ray-aks. 3-5 mm. long, gibbously obovate; disk-aks. similar but straighter. -- East slope of the upper meadow. May-June.

#### Pseudobahia

Pseudobahia heermanii (Durand) Rydb.

Loosely floccose annuals 1-2 dm. high, usually openly

branching, slender stems, reddish at base; lvs. 1-3 cm. long, pinnately lobed with linear divisions 0.5-2 mm. wide, the upper mostly linear; peduncles 2-5 cm. long; invol. 5-6 mm. high, persistently tomentose; phyllaries ca. 8, ovate, united ca. 1/2 their length, the basal portion developing callous processes between the lobes, ray-fls. 6-10 mm. long, female, fertile, yellow; disk-fls. many, fertile with prominently hairy slender tube; aks. 2-2.5 mm. long, brown-strigose; pappus vestigial-paleaceous. --  
West slope of the lower meadow. April.

### Senecio

Senecio integerrimus Nutt. var. major (Gray) Cron.

Groundsel.

Stout perennial from a short erect crown with fibrous roots; stems solitary, 4-8 dm. tall, mostly glabrous; lower lvs. entire to denticulate or slightly lobed, lance-oblong to ovate, the blades 4-12 cm. long, on petioles from much shorter to ca. as long; cauline lvs. gradually reduced upward; infl. of 4-10 heads in a flat-topped open cluster; invol. 8-12 mm. high; phyllaries ca. 14-20, pale green with purple-brown tips, rays 5-10, yellow, mostly 1-2 cm. long, disk-fls. yellow; aks. glabrous; pappus of long, white capillary bristles. -- West slope of the lower meadow.  
May.

### Solidago

Solidago californica Nutt. California Goldenrod.



Stems from a creeping rhizome, 3-12 dm. high, like the lvs. densely cinereous-puberulent; basal and lower cauline lvs. spatulate to oblong, usually acute, attenuate to the base, firm, crenate, 5-14 cm. long, 1-3 cm. wide, the upper cauline much reduced, elliptic, entire, sessile; infl. a narrow dense thyrse; invol. 3-5 mm. high; phyllaries lance-linear to narrowly oblong, sharply acute to obtuse, puberulent to glabrous; ray-fls. 8-13, yellow; disk-fls. 5-12, yellow; aks. hispidulous; pappus copious, setose, whitish. -- Lower meadow and southern end of river valley. August.

#### Taraxacum

Taraxacum officinale Wiggers. Common Dandelion.

Lvs. slightly petioled, 5-20 cm. long, oblong or spatulate, sinuate-pinnatifid to subentire, the longer marginal lobes toothed and with intermediate-small teeth; fls. all ligulate, 10-15 mm. long; heads 2-5 cm. broad, bright yellow-orange; phyllaries green to brownish, mostly not appendaged; aks. 2-4 mm. long, drab or olivaceous, tubercled at summit, pappus of fine white capillary bristles. -- Throughout the property but primarily in the upper meadow. April-May.

#### Wyethia

Wyethia angustifolia (DC.) Nutt.

Stems 3-6 dm. high, subscapose or leafy, appressed-pubescent to tomentose; basal lvs. equaling or exceeding

the stems, lanceolate, tapering to base and apex, long-petiolate, the cauline reduced, becoming ovate-lanceolate and sessile, entire or sometimes undulate; heads 1-3, ca. 3 cm. wide, on long slender peduncles; phyllaries numerous, erect, lanceolate, coarsely ciliate, purple at base; receptacle chaffy, roundish; ray-fls. pistillate, with an oblong to oval, usually 2-3-denticulate ligule; disk-fls. perfect, their corollas with short tube and subcylindric throat, 5-toothed; palea pubescent; aks. 6-8 mm. long, puberulent at summit; pappus of united coroniform scales, prolonged into 1-4 stout scabrous awns at the angles. -- Throughout property especially in upper meadow. May.

## DISCUSSION

There appears to be one definite range extension, that of Holodiscus discolor. Its reported distribution is coastal and insular, occurring from Los Angeles County to Del Norte County.

Several species vary markedly from the holotype and may represent new varietal types or intergrades. The most outstanding example is Wyethia angustifolia, in which the flower head and its components are much smaller than typical. Montia linearis and Montia perfoliata show a great deal of variance in leaf size and shape. Collomia grandiflora is smaller than normal with the leaves being dissected rather than entire. Phlox speciosa ssp. occidentalis has floral tubes much shorter than typical. Marah fabaceus var. agrestis has corollas that vary in size and shape.

Aster chilensis and Aster occidentalis belong to alliance groups that are poorly understood and difficult to categorize. Sidalcea malvaeflora ssp. asprella is as confusing on the subspecific level. Other species exhibit variations but differ to a lesser extent than those mentioned.

No attempt has been made here to determine the status of the variants as this would have required comparison with a large number of collections held by other herbaria. In each instance this would represent a major research project.

The identification of 2 collections were in doubt, those of Dudleya and Salix. The former was never observed to flower, while the latter was not authenticated.

It is recommended that the weedy or otherwise noxious species; Rhus diversiloba, Cirsium vulgare, Centaurea melitensis, and Verbascum thapsus be eradicated. The reason for removal of the poison oak and thistles is obvious while the dry inflorescence of the mullein is aesthetically displeasing.

In addition, introduction of the following absent native species is suggested: Pityrogramma triangularis, Baeria chrysostoma, Layia fremontia, Heteromeles arbutifolia, Clematis linguisticifolia, Limnanthes alba, Pinus sabiniana, and finally the California state flower Eschschalzia californica. The introduction of new species should be strictly limited and the representative examples of each habitat type should be preserved.

Any landscaping or introduction of plant species should especially avoid disturbing the unique habitat on the east slope above Esperanza Creek. As previously stated this area contains numerous species not found elsewhere on the property and every effort should be made to insure its preservation.

## SUMMARY

A total of 187 species and varieties were collected in the designated research area. There appears to be one definite range extension, that of Holodiscus discolor. Several species vary markedly from the holotype and may represent new varietal types or intergrades. Wyethia angustifolia, Aster chilensis, Aster occidentalis, and Sidalcea malvaeflora ssp. asprella are examples.

It is recommended that the weedy or otherwise noxious species Rhus diversiloba, Cirsium vulgare, Centaurea melitensis, and Verbascum thapsus be eradicated from the property. In addition, introduction of the following absent native species is suggested: Pityrogramma triangularis, Baeria chrysostoma, Layia fremontia, Heteromeles arbutiflora, Clematis lingusticifolia, Limnanthes alba, Pinus sabiniana, and Eschscholzia californica. With these changes the area should be an excellent place to pursue the study of native plant species.

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