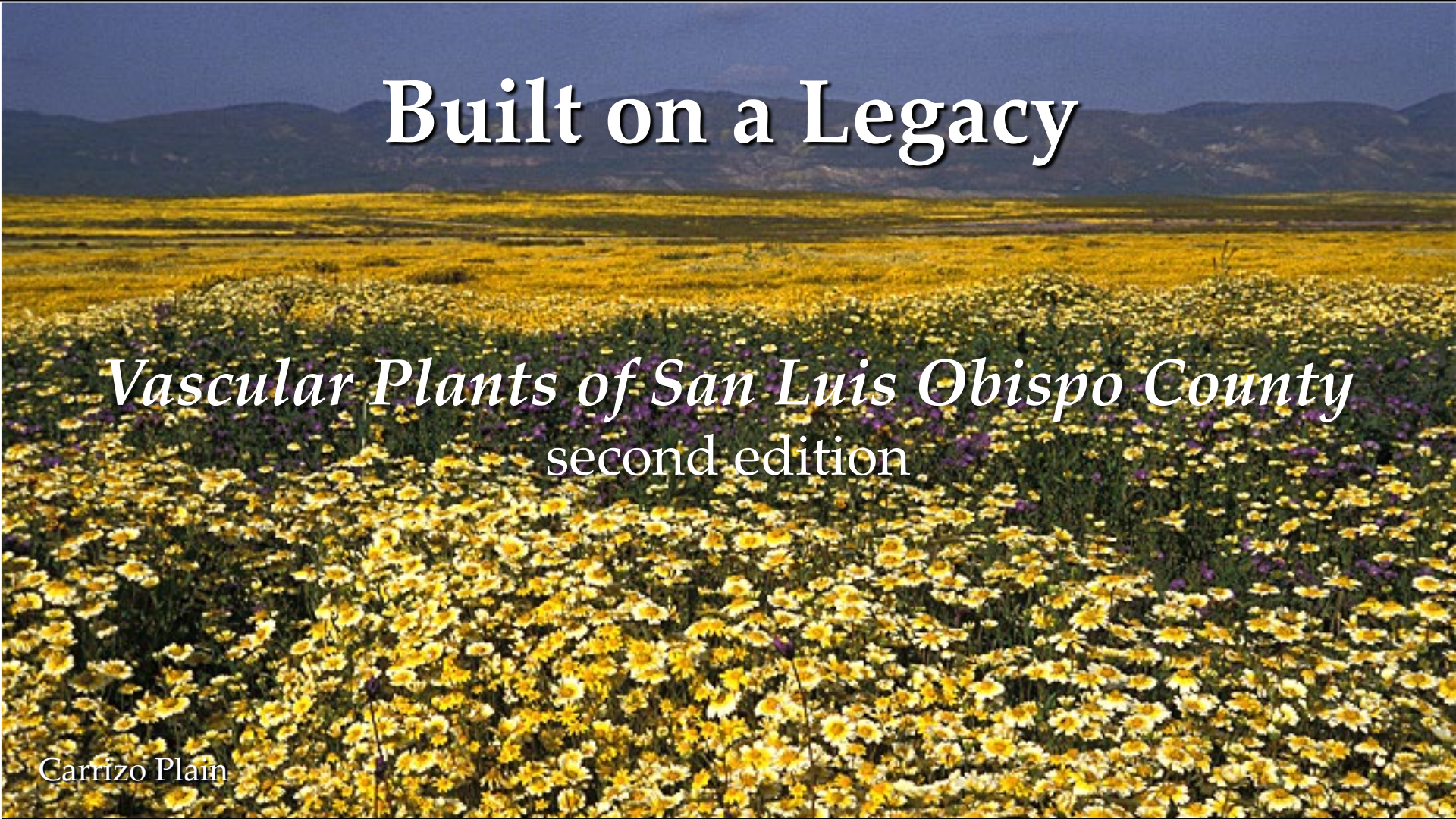
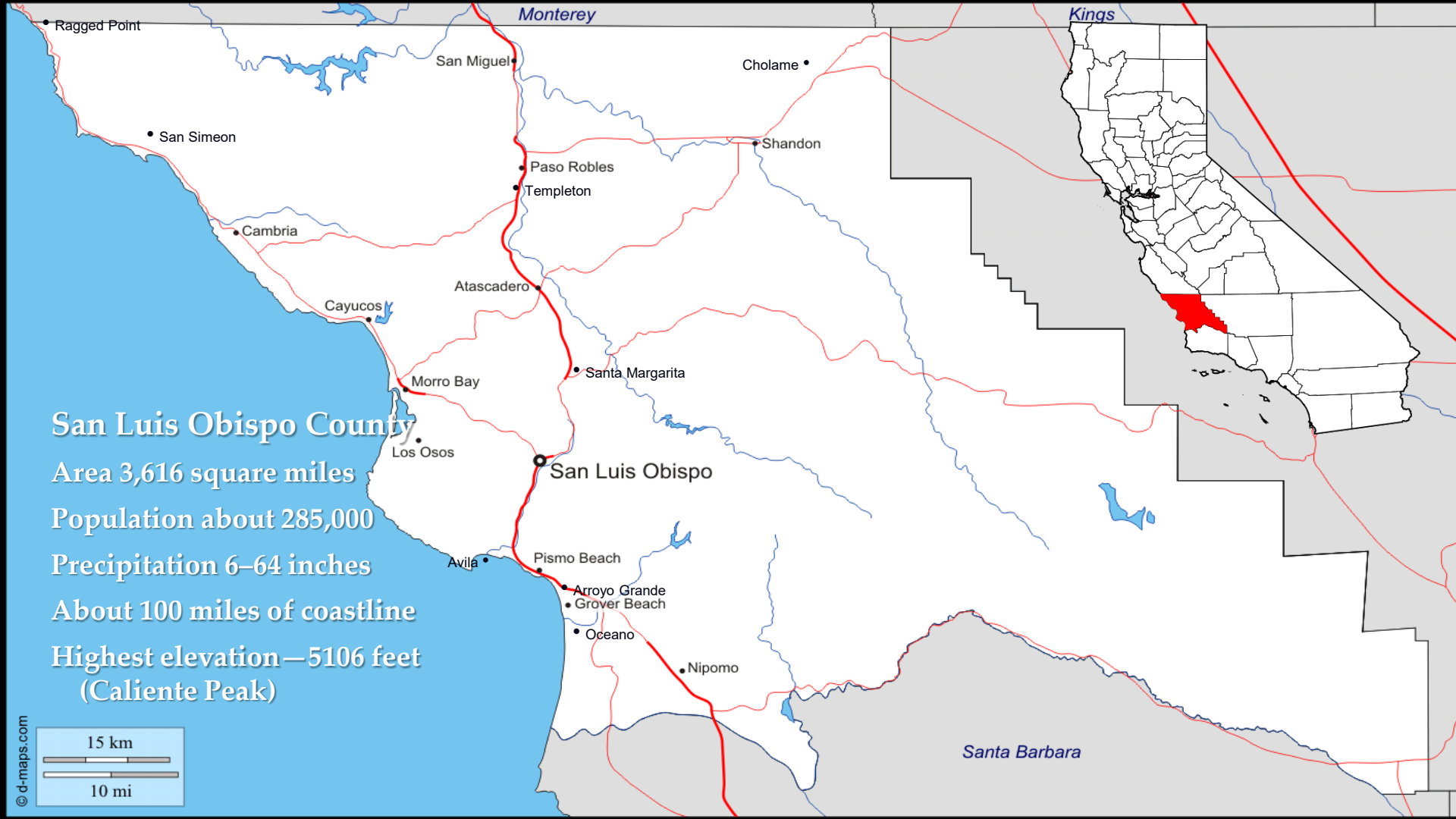
Built on a Legacy

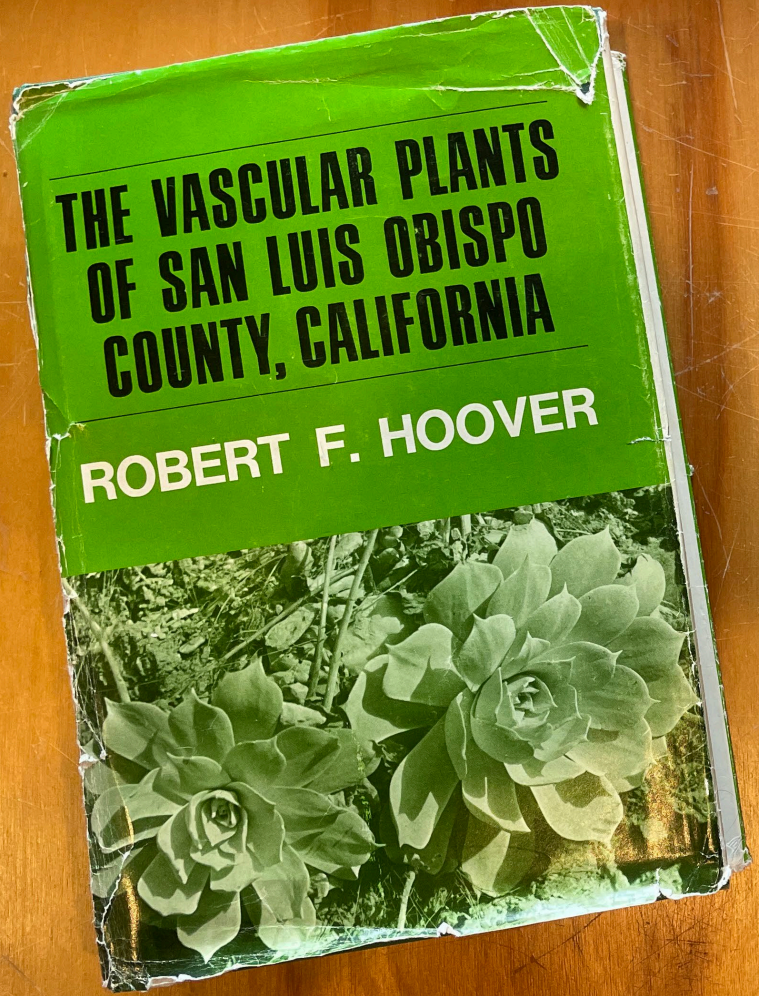
Vascular Plants of San Luis Obispo County

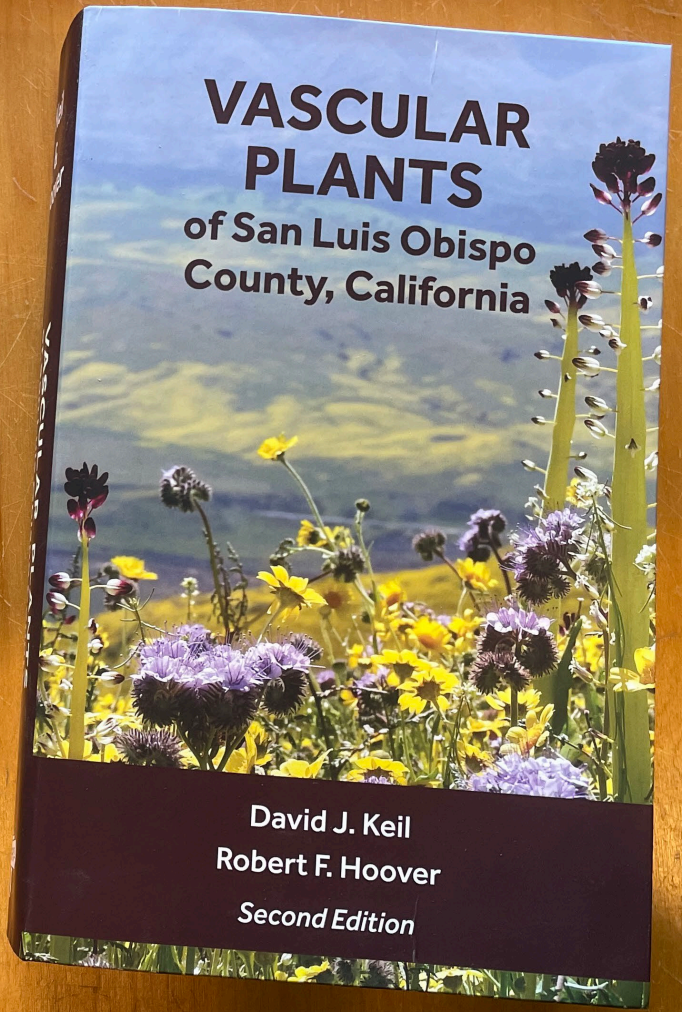
second edition



Carrizo Plain

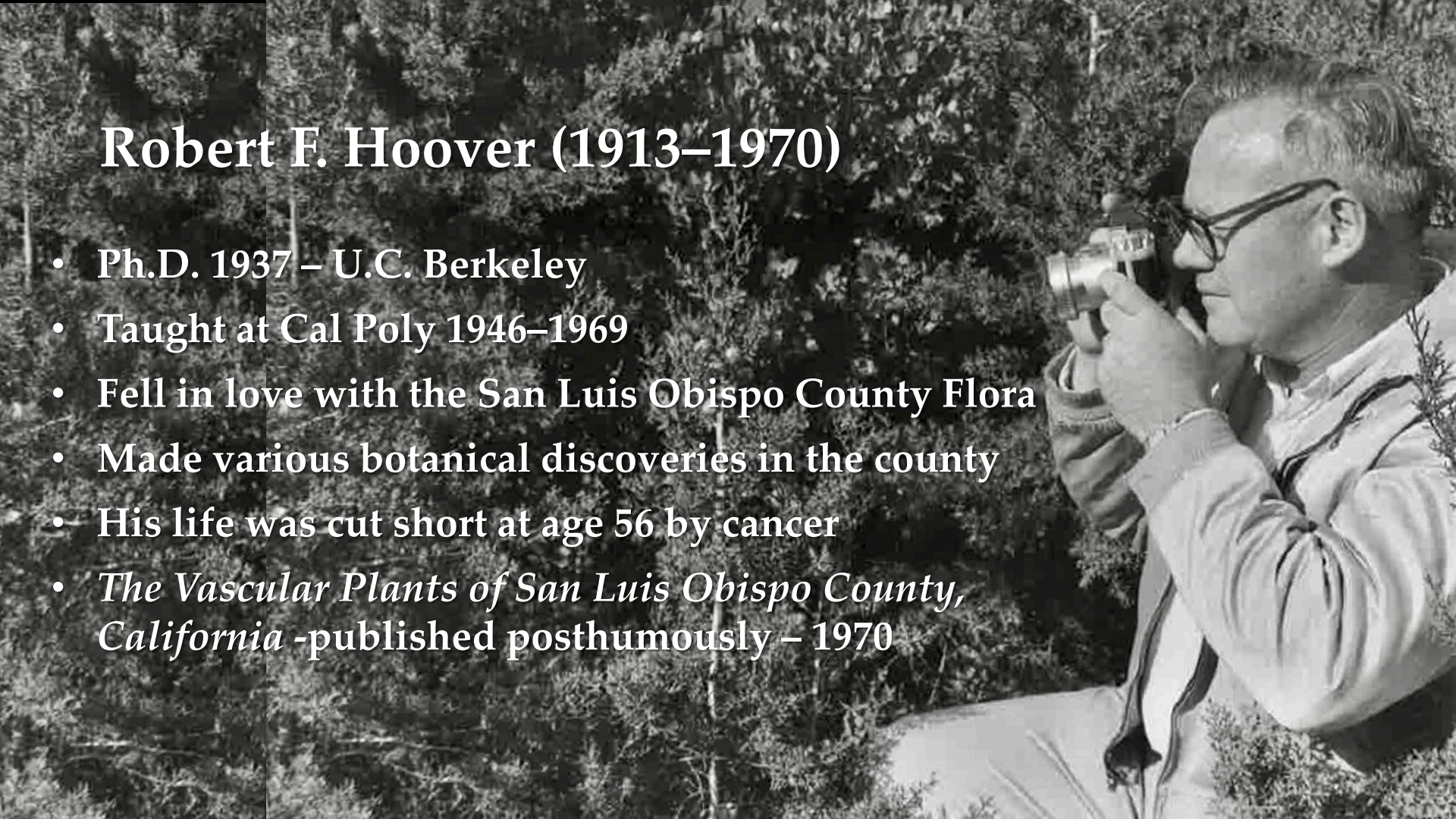

Monterey
Kings
Ragged Point
San Miguel
Cholame
San Simeon
Shandon
Paso Robles
Templeton
Cambria
Atascadero
Cayucos
Morro Bay
Santa Margarita
San Luis Obispo County
Area 3,616 square miles
Population about 285,000
Precipitation 6–64 inches
About 100 miles of coastline
Highest elevation—5106 feet
(Caliente Peak)
Los Osos
San Luis Obispo
Avila
Pismo Beach
Arroyo Grande
Grover Beach
Oceano
Nipomo
Santa Barbara
15 km
10 mi
© d-maps.com


THE VASCULAR PLANTS OF SAN LUIS OBISPO COUNTY, CALIFORNIA
ROBERT F. HOOVER


VASCULAR PLANTS
of San Luis Obispo County, California
David J. Keil
Robert F. Hoover
Second Edition

Robert F. Hoover (1913–1970)

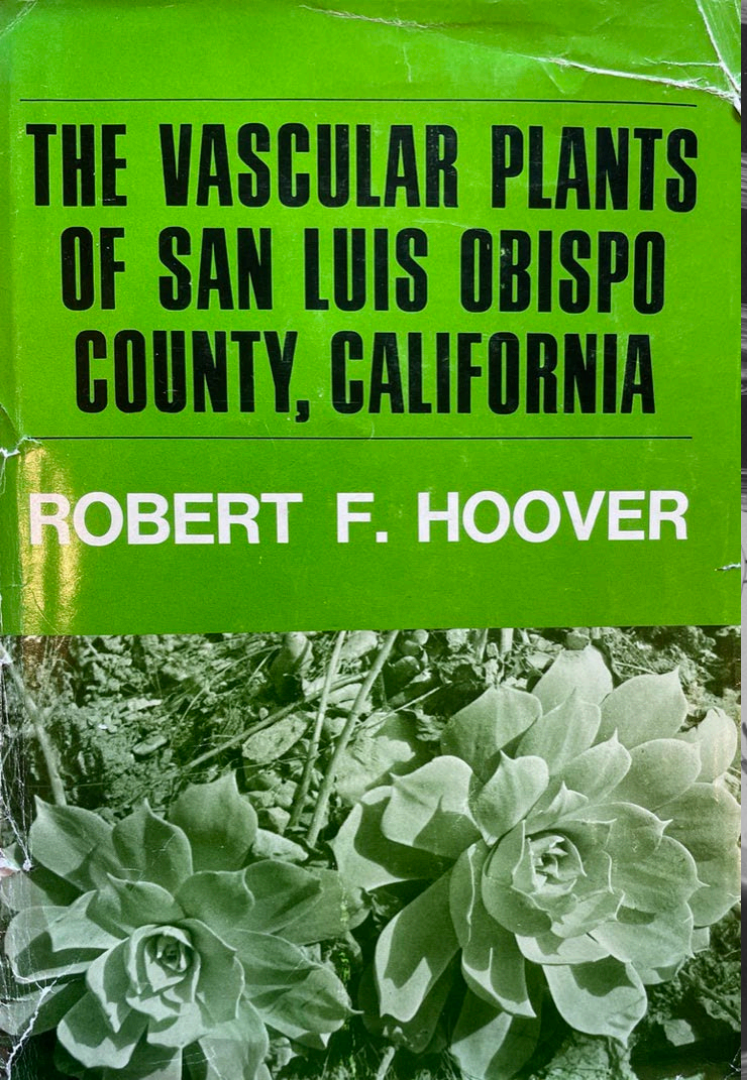
- Ph.D. 1937 – U.C. Berkeley
- Taught at Cal Poly 1946–1969
- Fell in love with the San Luis Obispo County Flora
- Made various botanical discoveries in the county
- His life was cut short at age 56 by cancer
- *The Vascular Plants of San Luis Obispo County, California* -published posthumously – 1970



- Hoover was a field botanist who loved to explore
- He was one of the founding members of the California Native Plant Society and organized the San Luis Obispo Chapter

Cuyama Valley and Caliente Range

photo by Robert F. Hoover



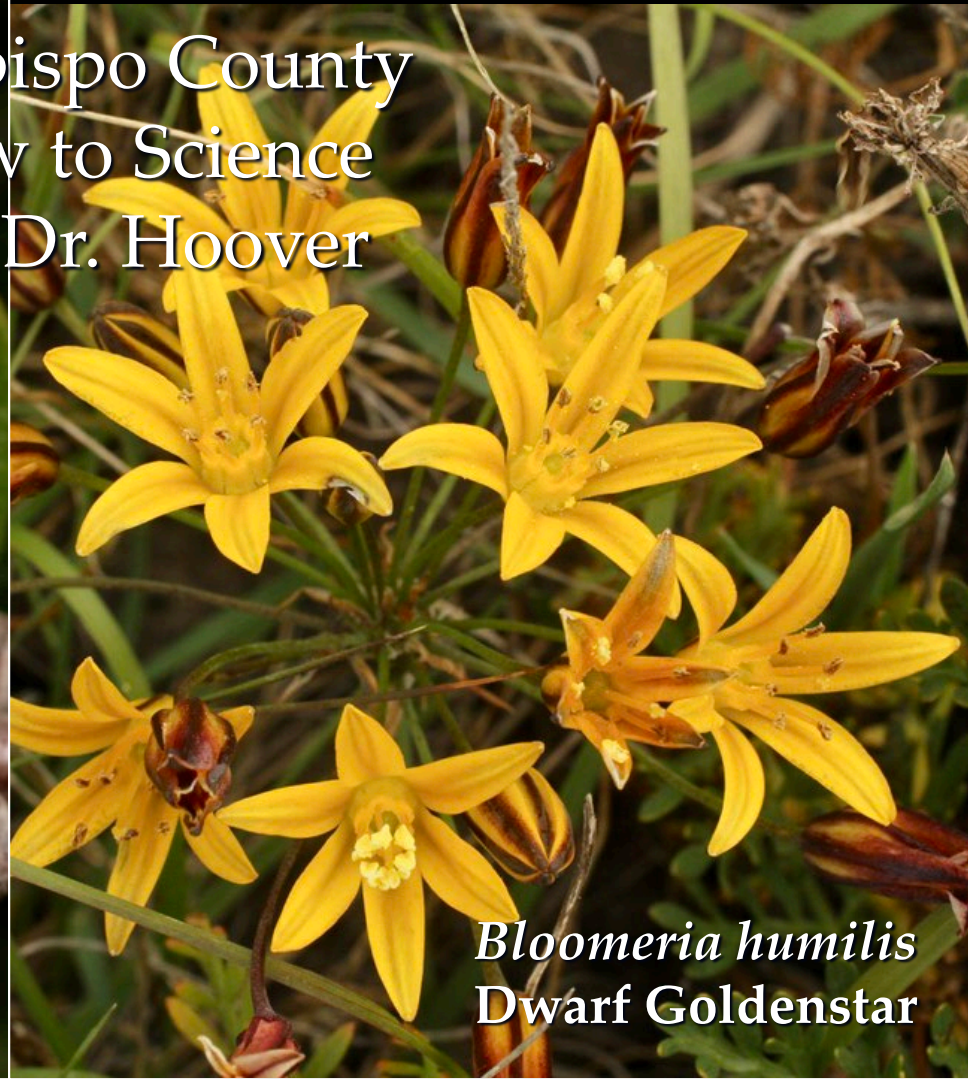
In 1969 Cal Poly's herbarium
was named the
Robert F. Hoover Herbarium

Dr. Hoover edited page proofs
of his flora as he was dying

Robert F. Hoover—ca. 1953

San Luis Obispo County Plants New to Science named by Dr. Hoover

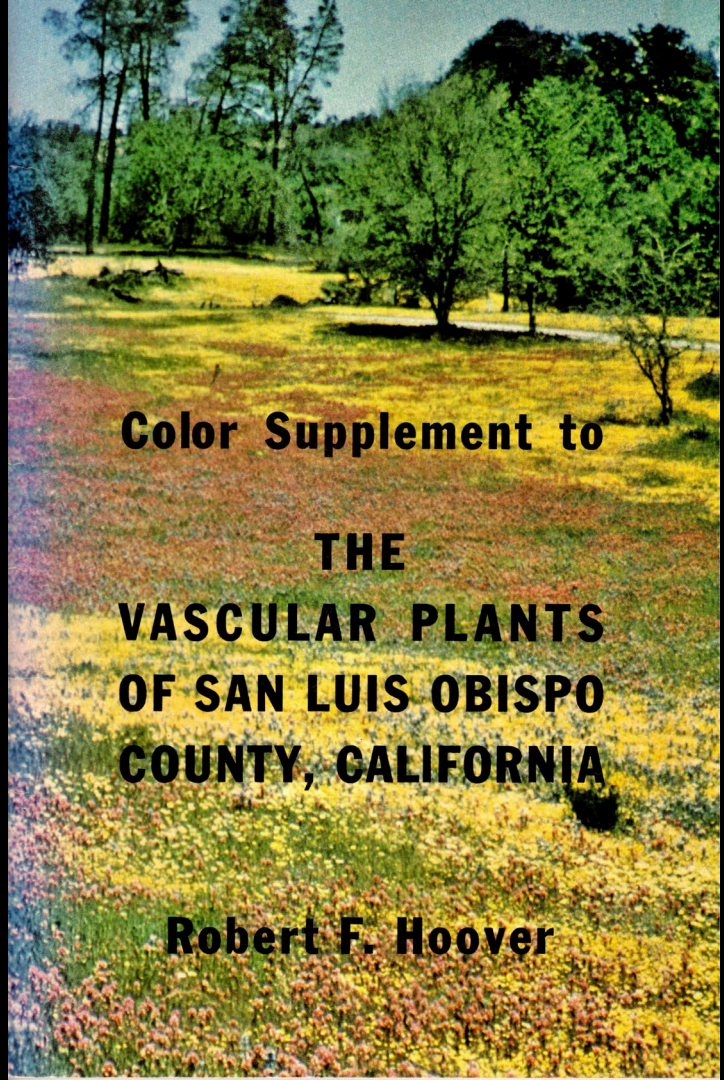
Ceanothus maritimus
Maritime Ceanothus

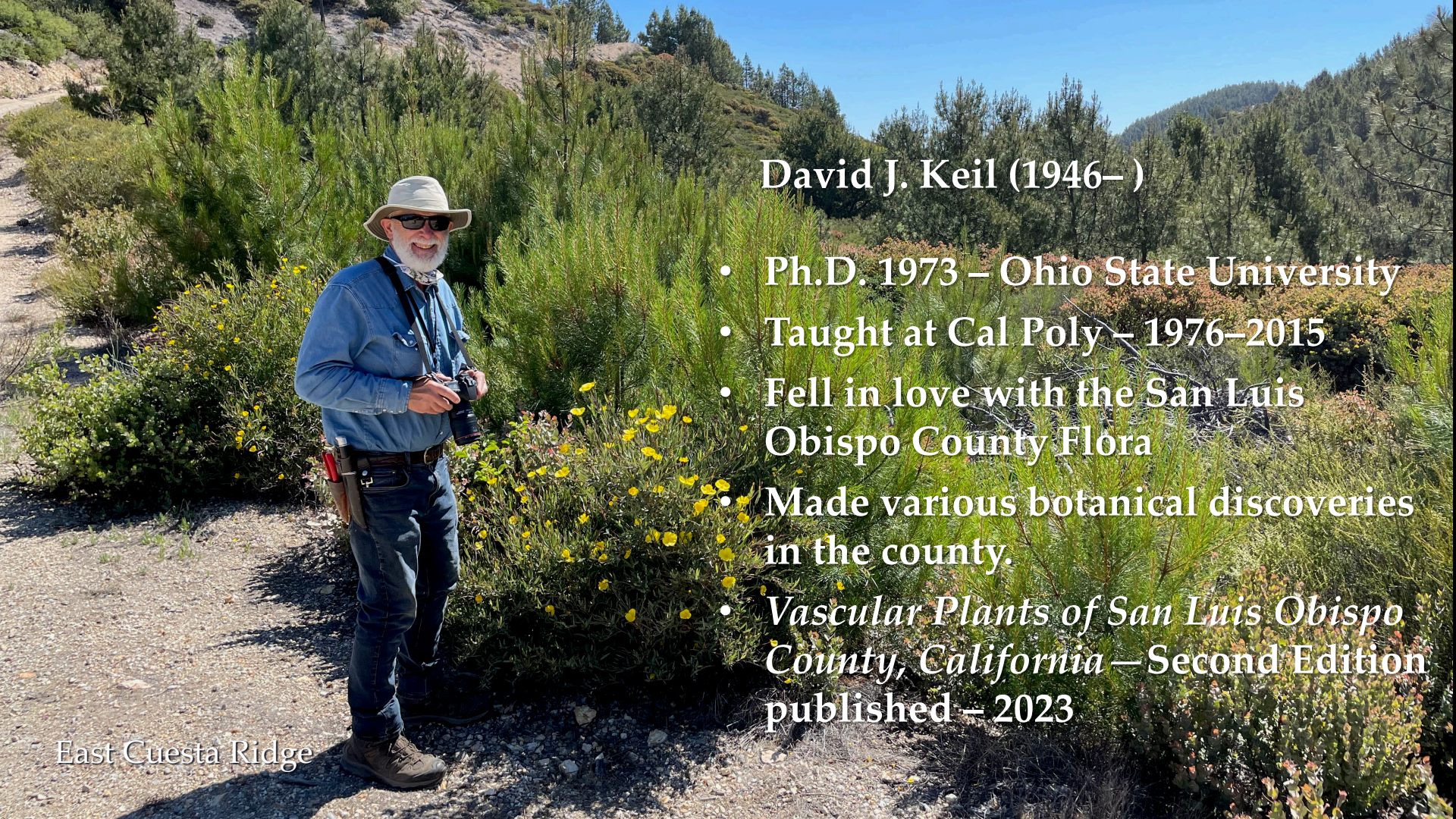


Bloomeria humilis
Dwarf Goldenstar

The Hoover Supplement

- Dr. Hoover had wanted to include a section of color photographs in his flora
- But because of his illness this was not possible
- In 1974 a committee of photographers produced *Color Supplement to The Vascular Plants of San Luis Obispo County, California*





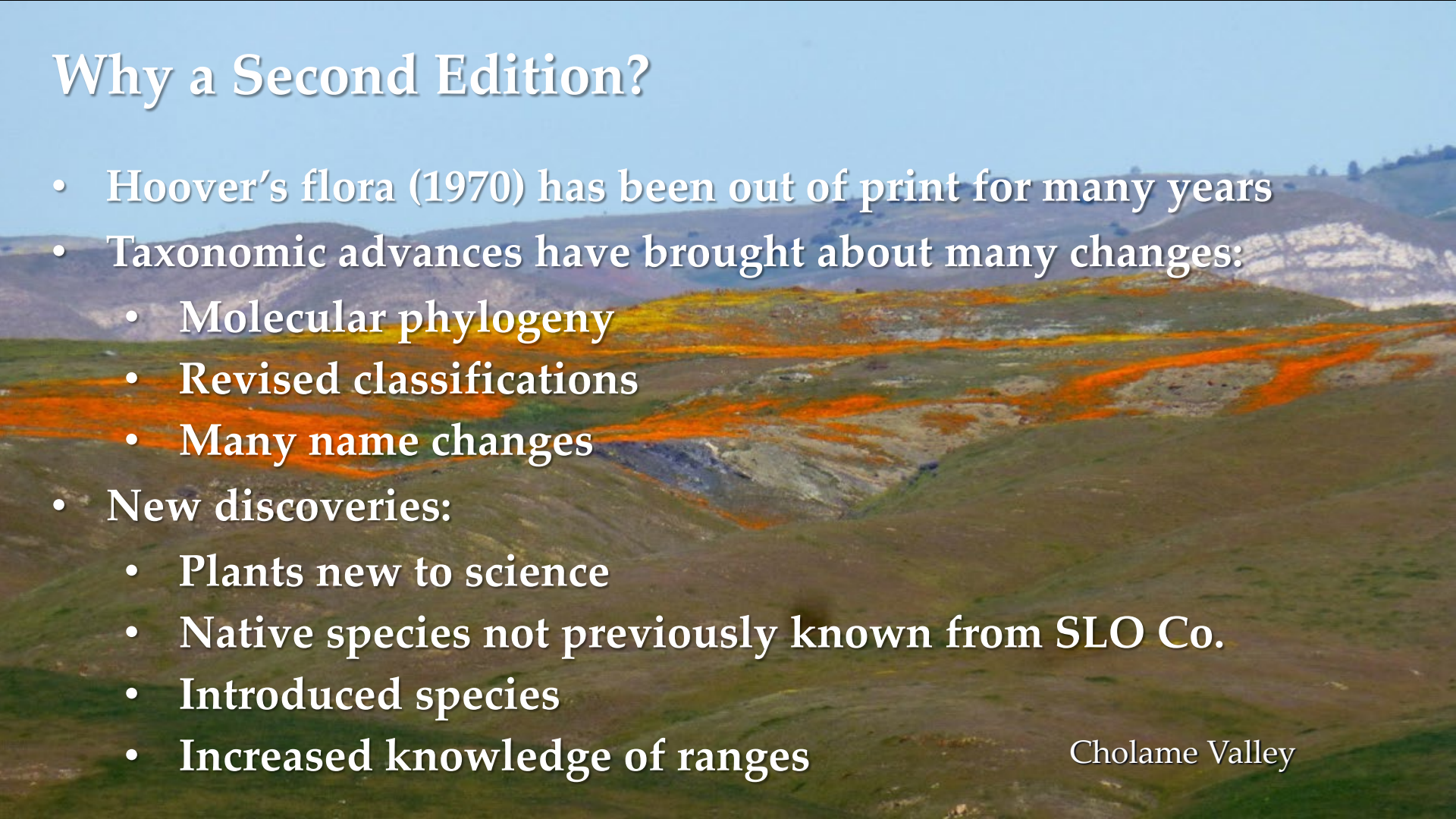
East Cuesta Ridge

David J. Keil (1946–)

- Ph.D. 1973 – Ohio State University
- Taught at Cal Poly – 1976–2015
- Fell in love with the San Luis Obispo County Flora
- Made various botanical discoveries in the county.
- *Vascular Plants of San Luis Obispo County, California* — Second Edition published – 2023

Why a Second Edition?

- Hoover's flora (1970) has been out of print for many years
- Taxonomic advances have brought about many changes:
  - Molecular phylogeny
  - Revised classifications
  - Many name changes
- New discoveries:
  - Plants new to science
  - Native species not previously known from SLO Co.
  - Introduced species
  - Increased knowledge of ranges


Cholame Valley

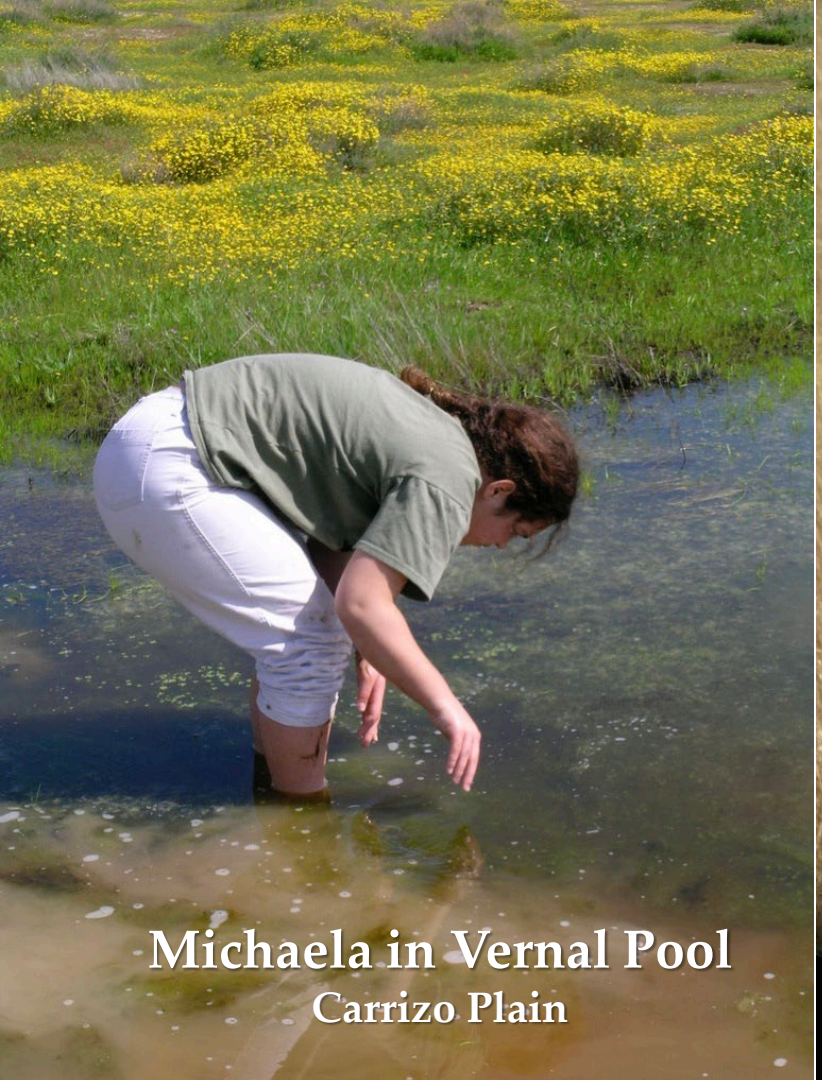
Timeline of the Project

- What prompted me to take on the project?
  - My teaching experiences
  - New discoveries
  - Book out of print
  - Participation in *Jepson Manual* project
  - Encouragement from CNPS members
- When did I decide to redo the flora?
  - Idea planted in 1980s, decision to do it mid 1990s
  - Copyright release
  - Sabbatical in marvelous spring of 1998

Temblor Range

The Process

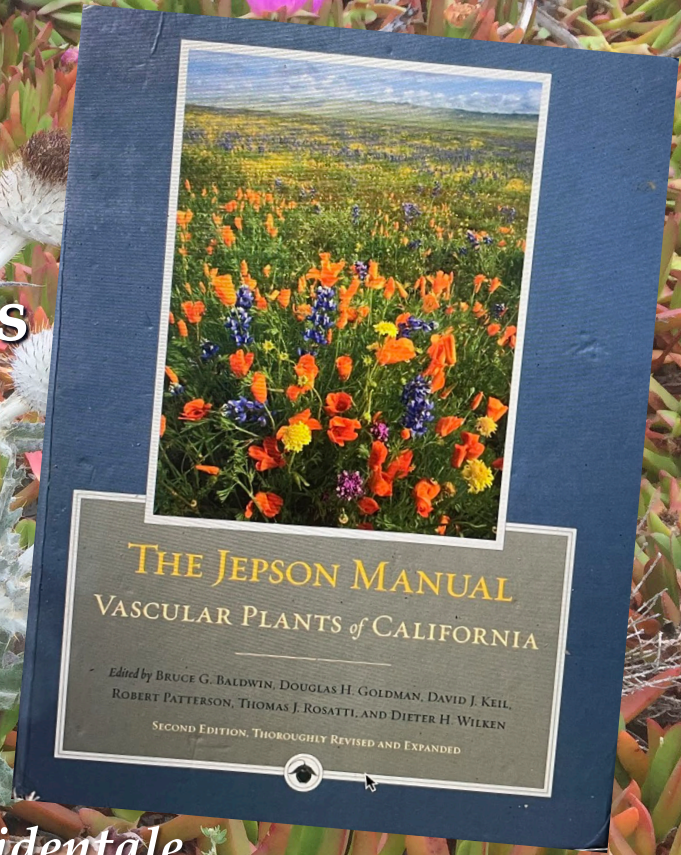
- Lots of field work
  - Plant collecting
  - Finding new stuff
  - Field notes
  - Photography
- Study of herbarium specimens
- Keeping up with the literature
- Writing descriptions, keys, etc.
- Editing, editing, editing



Family Involvement

Detours

- Teaching Responsibilities
- *Flora of North America* thistles
- *Jepson Manual* 2nd edition
- Editorship of *Systematic Botany Monographs*
- COVID



Cirsium occidentale var. *occidentale*
Cobwebby Thistle

Closing In . . .

- Working with Matt Ritter
- Formatting, finding our way
- Choosing/rejecting photos
- More field work, taking more photos
- Editing descriptions, keys
- Editing, editing, editing
- Finding new stuff—additions, name changes, range extensions
- Publication of undescribed taxa, name changes

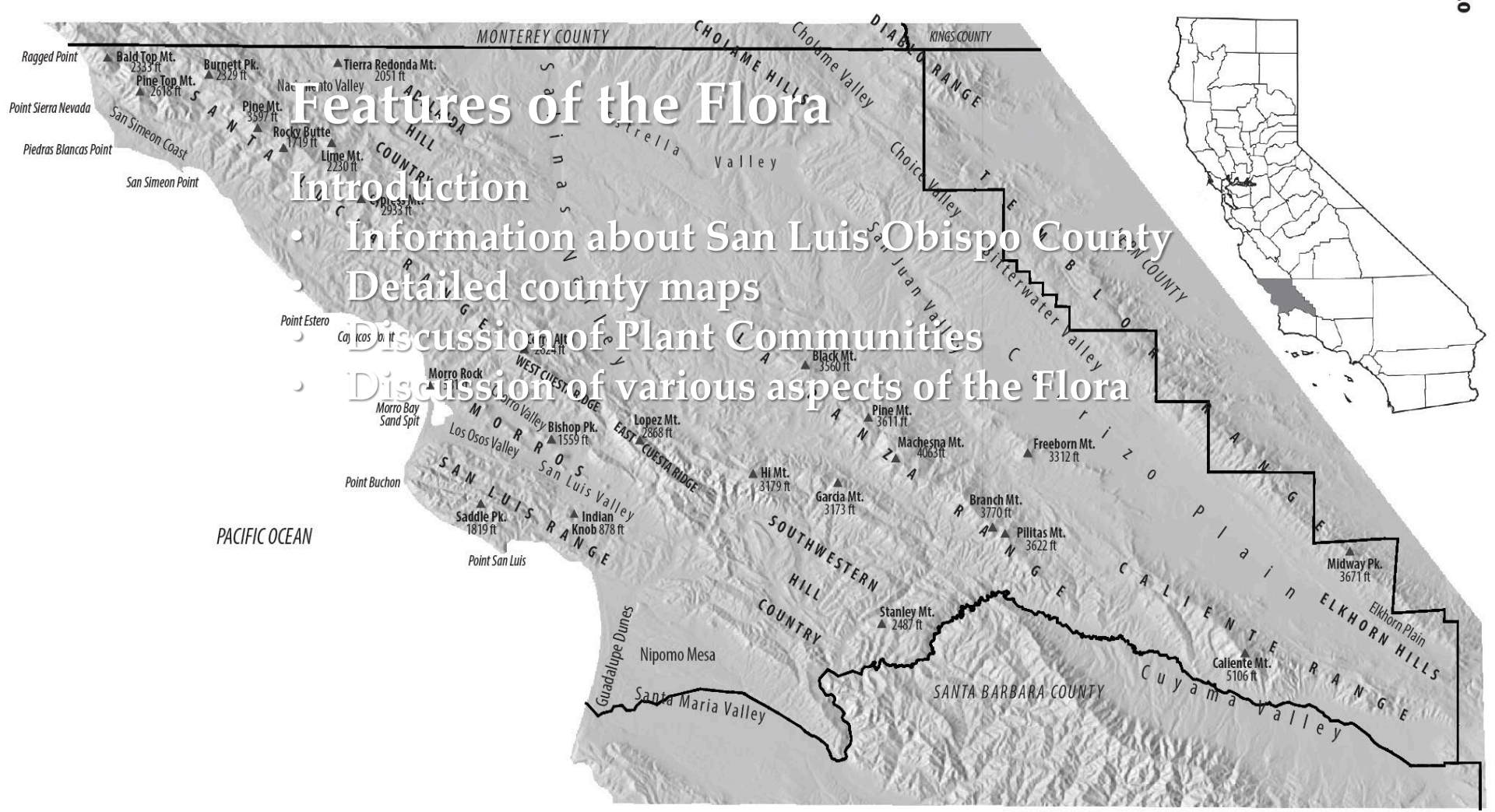
Pico Creek to Santa Lucia crest

Matt's Knowhow

- Publishing experience
- Knowledge of composition software
- Choices of paper, cover, binding
- Cover design
- Connections, connections, connections
- Patient . . . but
- Push to get things finished
- Suddenly on the fast track!!!

Features of the Flora

- A durable cover for field use
- Good paper and binding



Features of the Flora

Introduction

- Information about San Luis Obispo County
- Detailed county maps
- Discussion of Plant Communities
- Discussion of various aspects of the Flora

Features of the Flora

High quality photos of selected plants communities and over 430 plant species

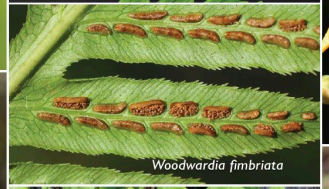
Photographic Sampler of the San Luis Obispo County Flora

Photographs included in this book were chosen to represent the native flora of San Luis Obispo County. Images included represent plants that grow in the various regions and communities of the county and sample its taxonomic diversity. The photos included here are organized according to the taxonomic/alphabetic organization of this book (with minor adjustments to accommodate photos of different shapes and sizes). Photos are my own unless otherwise indicated. Because of space limitations only a limited number of species are illustrated. Photos of many other species of the county's flora, including some of the common weedy species, have been published in *Wildflowers of San Luis Obispo*, California (Keil 2018), so I chose to include here plants that are not illustrated in that book.


Isoetes nuttallii


Azolla microphylla


Athyrium filix-femina var. *cyclosorum*


Woodwardia fimbriata


Selaginella bigelovii


Cystopteris fragilis


Chloropyron maritimum subsp. *palustre*


Argemone munita subsp. *munita*


Ehrendorferia chrysantha


Eschscholzia rhombipetala


131
Kopsiopsis strobilacea


Hesperomecon linearis


Papaver heterophyllum


150
Calochortus fimbriatus


Calochortus luteus


Calochortus splendens


Calochortus venustus


Fritillaria agrestis


Prosartes hookeri


Toxicoscordion venenosum var. *venenosum*

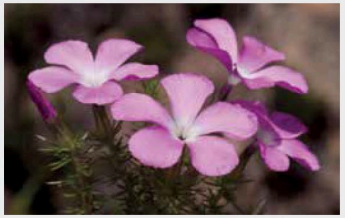
Features of the Flora

Coordination with

Wildflowers of San Luis Obispo

for additional photos

Wildflowers contains photographs of more than 280 species *not illustrated* in the Flora



Marlin Harms — Flowers 2–3.5 cm diameter

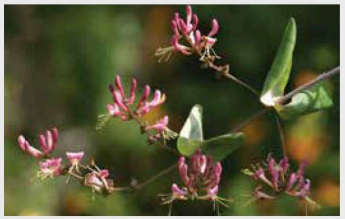
Prickly-Phlox

Linanthus californicus
[Leptodactylon californicum]

Subshrub. Leaves divided into needle-like lobes. Chaparral, oak woodland on sandstone.

In SLO vicinity, known to occur only on Indian Knob and nearby hills.

MARCH – MAY



David Keil — Flowers 12–18 mm long

California Honeysuckle

Lonicera hispidula

Woody vine, scrambling over other shrubs. Red berries ripen in summer and autumn. Brush and woodland, often near streams.

West Cuesta, Pennington Creek Reserve, Reservoir Cyn, Irish Hills, Prefumo Cyn, See Cyn.

APRIL – JULY

David Keil, Marlin Harms, & Bill Bouton (inset) — Flowers 12–18 mm long

Stinging Lupine

Lupinus hirsutissimus

Annual. Leaves and stems with stiff bristles. Roadsides, brushy hillsides, chaparral burns. See photo, page 58. Other annual *Lupinus* species grow in SLO area.

West and East Cuesta, Poly Cyn, Cerro San Luis, Prefumo Cyn, Indian Knob, Pismo Preserve.

MARCH – MAY

Marlin Harms — Flowers 8–15 mm diameter

Pacific Starflower

Lysimachia latifolia
[Trientalis latifolia]

Perennial. Leaves crowded in ring at top of stem. Petals 5–7. Moist, shady slopes.

Santa Lucia Wilderness, Reservoir Cyn, Prefumo Cyn, See Cyn.

MARCH – JUNE

Features of the Flora

Keys and descriptions

- The first edition had Dr. Hoover's excellent keys
- He wanted to have descriptions, but his illness precluded that

awn-tipped scales. Rare or overlooked, mostly on north-facing slopes: Paso Robles area to Creston; eastern slope of La Panza Range; Syncline Grade; Carrizo Plain; Temblor Range near summit on CA 58; Caliente Range; Cuyama Canyon. Flowering Mar–May.

Lasthenia minor (DC.) Ornduff • CUTLEAF GOLDFIELDS. Annual. Stems erect or ascending, simple or freely branched, sparingly to densely woolly. Leaves linear, entire, toothed, or lobed, glabrous to softly hairy. Heads radiate. Involucre 4–6 mm, hemispheric, phyllaries 7–14, distinct, hairy; receptacles conic. Ray flowers 8–13; rays 4–8 mm. Disk flowers many; anther tips ovate or elliptic. Ray achenes densely puberulent, pappus of short scales; disk achenes 2–2.6 mm, narrowly club-shaped, glabrous or puberulent, pappus absent or of 2–3 brown or white, narrowly tapered to lanceolate scales intermixed with shorter scales. Grassy areas: coast eastward to Cottonwood Pass and Carrizo Plain, notably abundant in La Panza district. Plants found on a coastal bluff between Morro Bay and Cayucos tend to have shorter and more spreading stems, as in maritime variants of many other species. Flowering Mar–Jun.

Layia Hook. & Arn.

Annuals. Leaves basal and cauline, proximally opposite, distally alternate, simple, linear to oblanceolate or ovate, sessile, proximal toothed or ± pinnately lobed, distal ± reduced, often entire. Heads radiate, peduncled, solitary or in leafy cymes; involucre urn- to bell-shaped or hemispheric; phyllaries 1 per ray flower, ± completely folded around ray ovaries and falling with ray achenes; receptacles ± flat, paleate, paleae distinct, in most species in 1 involucre-like series between ray and disk flowers. Ray flowers 3–27; rays 3-lobed, white to yellow, sometimes yellow with ± white tips. Disk flowers 5–many; corollas yellow. Ray achenes glabrous to sparsely hairy, club-shaped, flattened front-to-back, pappus absent; disk achenes ± straight, narrowly club-shaped; disk pappus absent or of scales, awns, or bristles, these sometimes plumose.

1. Receptacle paleate throughout, each disk flower individually subtended by a palea; plant glandless.....*L. chrysanthemoides*
1' Receptacle with paleae in 1 involucre-like series between ray and disk flowers; plant glandular
2. Pappus absent
3. Basal leaves usually minutely dentate to serrate; rays white to cream.....*L. heterotricha*
3' Basal leaves conspicuously lobed
4. Involucre and phyllaries bulging out at base; stems usually purplish-dotted
5. Ray flowers in 1 series, 8–18, rays yellow or yellow with white tips; disk achenes 3–4 mm; plant scented.....*L. gaillardioides*
5' Ray flowers in 2 series, 13–27, rays yellow with white tips; disk achenes 2.5–3 mm; plant not scented.....*L. jonesii*
4' Involucre and phyllaries not bulging out at base; stems usually not purplish-dotted
6. Anthers yellow; rays uniformly white or yellow; plant scented; phyllary tips ≤ phyllary bases.....*L. pentachaeta*
6' Anthers dark purple; rays yellow with white tips; plant not scented; phyllary tips ≥ phyllary base.....*L. platyglossa*
2' Pappus present
7. Pappus of lanceolate or elliptic scales
8. Pappus scales proximally plumose, adaxially woolly; rays white to cream or yellow
9. Ray corollas white, generally aging pink to deep rose; herbage with a pleasant resinous-spicy odor, often evident even when plant not touched; proximal leaves often deeply lobed, the lobes narrow, sometimes with minor secondary lobes; pappus scales linear-attenuate, generally ≤ 0.13 mm wide at base; coastal dunes.....*L. erubescens*
9' Ray corollas white to cream or yellow, often not aging pink; herbage generally not noticeably scented if plant not touched; proximal leaves generally not deeply lobed; pappus scales linear-attenuate to awl-like, ≤ 0.3 mm wide at base; east of Santa Lucia Range crest.....*L. glandulosa*
8' Pappus scales not plumose, not adaxially woolly; rays yellow with white or cream tips or rarely yellow throughout
10. Ray flowers in 2 overlapping series, 13–27; involucre and phyllaries markedly bulging out at base; stems usually purplish-dotted; pappus 0.5–2 mm; ray achenes glabrous, shiny; serpentine clay soils, near coast.....*L. jonesii*
10' Ray flowers in 1 series, 6–15; involucre and phyllaries not conspicuously bulging out at base; stems not purplish-dotted; pappus 2–3.5 mm; ray achenes sparsely hairy or glabrous, dull; alkaline soils in interior.....*L. munzii*
7' Pappus of bristles
11. Anthers dark purple
12. Pappus bristles barbed; rays 3–21 mm, yellow with white or cream tips or yellow throughout.....*L. platyglossa*
12' Pappus bristles plumose proximally or throughout
13. Rays (3.5)4.5–7 mm, yellow or yellow with white or cream tips; pappus bristles 15–24.....*L. gaillardioides*
13' Rays 1–3(4) mm, yellow; pappus bristles 10–16.....*L. hieracioides*
11' Anthers yellow to light brown
14. Pappus readily deciduous and easily removed from mature achenes; leaves minutely toothed or entire; rays white to cream.....*L. heterotricha*
14' Pappus persistent on and firmly attached to achenes; at least basal leaves conspicuously lobed; rays white to cream or yellow.....*L. pentachaeta*
15. Rays white or cream.....subsp. *albida*
15' Rays yellow.....subsp. *pentachaeta*

◊***Layia chrysanthemoides*** (DC.) A.Gray • SMOOTH TIDYTIPS. Plants not glandular or scented. Stems erect or ascending, often purplish. Leaves linear or oblong to lanceolate or oblanceolate, sometimes deeply lobed, ± scabrous-ciliate. Peduncles to 10 cm; involucre hemispheric; phyllaries 4–12 mm, ± glabrous to papillate-scabrous, tips wide, ± equaling bases; paleae each subtending a disk flower. Ray flowers 6–16; rays 3–18 mm, yellow with white tips. Disk corollas 3–5 mm; anthers dark purple. Ray achenes 2.5–4 mm, glabrous; disk achenes 2.5–4 mm, hairy; pappus absent or usually of 2–18 whitish, minutely scabrous awns or bristles, longest 1.5–3.5 mm. A California native but not indigenous to SLO Co. Apparently introduced in a wildflower seed mix hydro-seeded onto disturbed slopes on the Cal Poly campus, probably not persisting. Flowering Mar–Jun.

⊰***Layia erubescens*** B.G.Baldwin • SANDHILLS LAYIA. Plants glandular, strongly aromatic, odor resinous-spicy. Stems generally purplish, ± bristly and stalked-glandular, especially distally. Leaves linear or elliptic to oblanceolate, proximal shallowly to deeply lobed, lobes linear, entire or sometimes secondarily lobed, distal generally entire. Peduncles 5–65 mm, usually dark purple; involucre ± bell-shaped; phyllaries (5)6–8.5 mm, bristly-hairy and glandular, tips < to > bases; palea in 1 series between ray and disk flowers. Ray flowers 7–13; rays (4.5)9–20 mm, white, generally aging pink to deep rose. Disk corollas 3.5–5 mm; anthers yellow to ± brown. Ray achenes 3–4 mm, glabrous; disk achenes 3–4.5 mm, strigose; pappus of 9–12(15) narrow scales, 3–6 mm, 0.08–0.13(0.19) mm wide at base, plumose in proximal 1/2, adaxially often with wooly hairs in proximal 1/2. Stabilized dunes and sandhills from Morro Bay area to Guadalupe Dunes and Nipomo Mesa. Rapdily disappearing because of development pressures and competition from veldt grass [*L. glandulosa* (Hook.) Hook. & Arn., in part]. Flowering Feb–Jun.

Layia gaillardioides (Hook. & Arn.) DC. • WOODLAND TIDYTIPS. Plants glandular, scented. Stems erect or ascending, purplish-dotted or streaked. Leaves linear to oblanceolate or lanceolate, proximal serrate or shallowly lobed. Peduncles to 6.5 cm; involucre urn-shaped to bell-shaped; phyllaries 4–8 mm, hairy, tips narrow, < than bulging bases; paleae in 1 series between ray and disk flowers. Ray

Features of the Flora

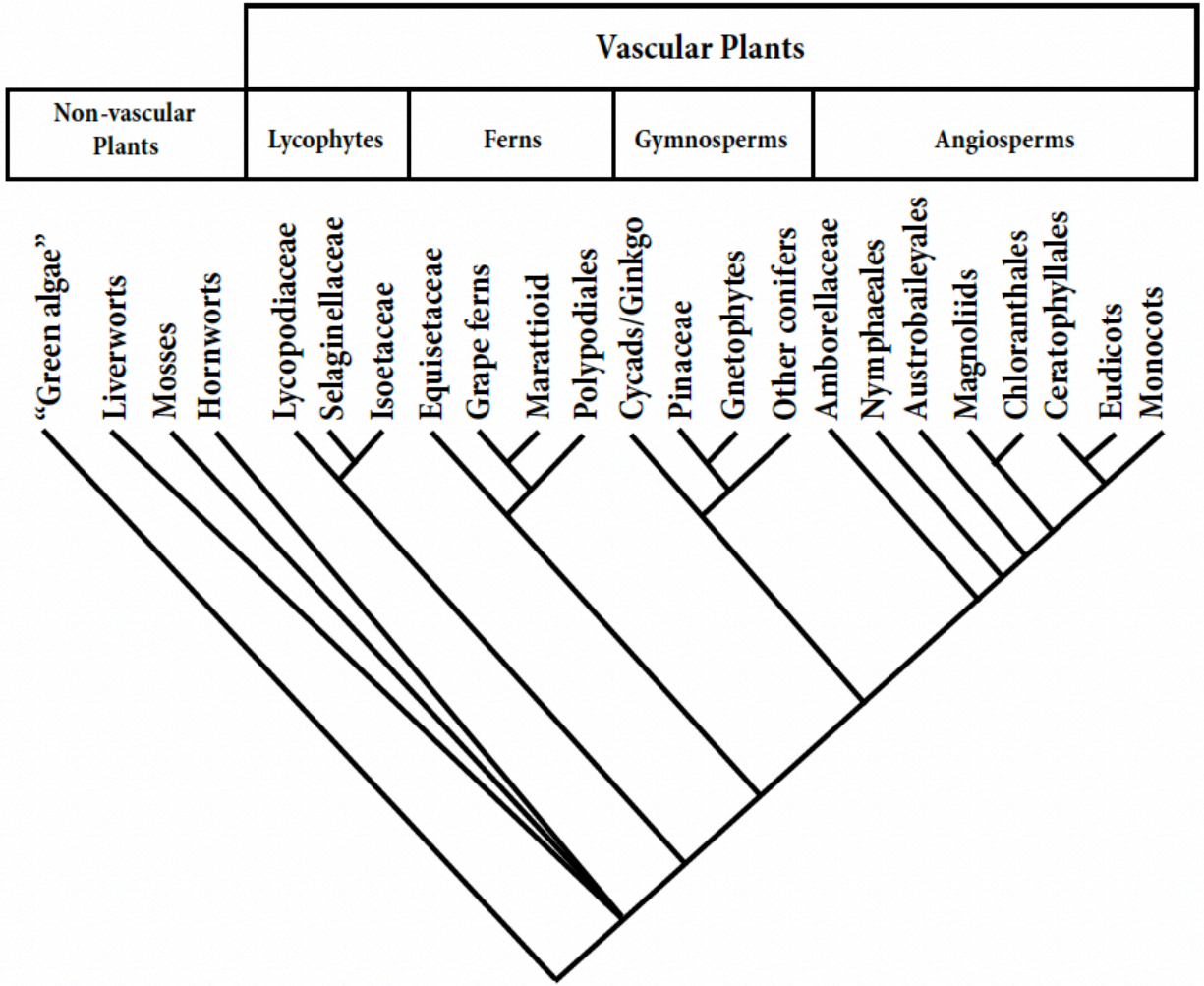
- Notation of rarity
- Up to date nomenclature
- Common names
- Detailed descriptions
- Habitat and range in the county
- Selective synonymy
- Flowering times

↬ ***Layia erubescens*** B.G.Baldwin • SANDHILLS LAYIA. Plants glandular, strongly aromatic, odor resinous-spicy. Stems generally purplish, ± bristly and stalked-glandular, especially distally. Leaves linear or elliptic to oblanceolate, proximal shallowly to deeply lobed, lobes linear, entire or sometimes secondarily lobed, distal generally entire. Peduncles 5–65 mm, usually dark purple; involucre ± bell-shaped; phyllaries (5)6–8.5 mm, bristly-hairy and glandular, tips < to > bases; palea in 1 series between ray and disk flowers. Ray flowers 7–13; rays (4.5)9–20 mm, white, generally aging pink to deep rose. Disk corollas 3.5–5 mm; anthers yellow to ± brown. Ray achenes 3–4 mm, glabrous; disk achenes 3–4.5 mm, strigose; pappus of 9–12(15) narrow scales, 3–6 mm, 0.08–0.13(0.19) mm wide at base, plumose in proximal 1/2, adaxially often with woolly hairs in proximal 1/2. Stabilized dunes and sandhills from Morro Bay area to Guadalupe Dunes and Nipomo Mesa. Rapidly disappearing because of development pressures and competition from veldt grass [*L. glandulosa* (Hook.) Hook. & Arn., in part]. Flowering Feb–Jun.

Features of the Flora

Phylogenetic organization of major groups:

- Lycophytes
- Ferns
- Gymnosperms
- Basal Angiosperms
- Magnoliids
- Ceratophyllales
- Eudicots
- Monocots



Features of the Flora

Alphabetical arrangement of taxa within major groups

Monocots

Agavaceae • THE AGAVE FAMILY

Herbs or succulent rosette perennials [shrubs, trees]. Leaves in basal rosettes, alternate and reduced to bracts on flowering stems, simple, thin and ± ephemeral or thick, fibrous, ± fleshy and long-lived, parallel-veined, entire to coarsely toothed, basally sheathing. Inflorescences racemes or panicles. Flowers bisexual, radial; floral tube present or absent; sepals 3, distinct, petaloid; petals 3, distinct; stamens 6; filaments free or adnate to floral tube; carpels 3, connate, ovary superior or inferior with 3 locules and 2–many axile ovules per locule, style 1 or stigmas sessile. Fruit a capsule; seeds usually black. Treated in the APG IV classification system as Asparagaceae subf. Agavoideae.

1. Leaves from bulb, thin, wavy-margined, withering by mid-summer; seeds 1–2 per locule, swollen
   2. Flowers opening in evening, closing around midnight; perianth segments 8–30 mm, adaxially white, abaxially purple-tinged or -striped; style ≤ perianth.....*Chlorogalum*
   2' Flowers open in daytime; perianth segments 5–8 mm, lavender to blue-purple throughout; style > perianth.....*Hooveria*

1' Leaves from stout caudex, thick, spine-tipped, long-persistent; seeds many per locule, flat
   3. Leaves spiny-dentate; perianth yellow or proximally ± green; style elongated; stamens and stigma exserted; ovary inferior.....*Agave*
   3' Leaves entire; perianth cream to white, sometimes purple-tinged; style short; stamens and stigma included; ovary superior.....*Hesperoyucca*

Agave L. • CENTURY PLANT

Succulent rosette perennials; individual rosettes living for several to many years, then flowering once and dying; basal offshoots developing into new rosettes. Leaves thick, fleshy, sword-like, linear to lanceolate, spiny-dentate [entire], spine-tipped. Inflorescence a tall, erect panicle [raceme], peduncle stout, cauline leaves progressively reduced, grading into scale-like bracts. Floral tube present, cup-shaped to tubular; anthers exserted, elongated, attached at middle; ovary inferior, style long, stigma knob-like. Capsule cylindric or obovoid, many-seeded; seeds flat.

****Agave americana*** L. • AMERICAN CENTURY PLANT. Leaves to 1.5 m, glaucous, spiny-dentate, tip a long, hard spine. Inflorescence 5–9 m, panicle branches spreading, hand-like; flowers many, erect. Perianth yellow or proximally ± green. Capsule 3.5–8 cm. Long-lived waifs, persisting or escaped from cultivation in coastal areas, sometimes forming dense colonies by basal offshoots: Morro Bay State Park; San Luis Obispo; Avila; Shell Beach. Flowering Jul–Sep.

Chlorogalum Kunth • SOAP PLANT

Bulb-forming perennials; individuals polycarpic, capable of flowering repeatedly. Leaves thin, linear, entire, wavy-margined or flat, not spine-tipped, grading into scale-like bracts. Inflorescence a panicle. Flowers vespertine, opening in late afternoon or evening, closing around midnight; floral tube absent; perianth segments abaxially purplish tinged with darker midveins, adaxially white; anthers small, attached in middle; ovary superior, style not exceeding perianth, stigma minutely 3-lobed. Capsule short, (3)6-seeded; seeds obovoid, black.

Chlorogalum pomeridianum (DC.) Kunth • SOAP PLANT. Bulb 7–15 cm, often covered with coarse, brown fibers. Leaves 6–25 mm wide, ± glaucous. Panicle 20–250 cm, ± diffusely many-branched. Flower buds cylindric; perianth parts in open flower15–25 mm.

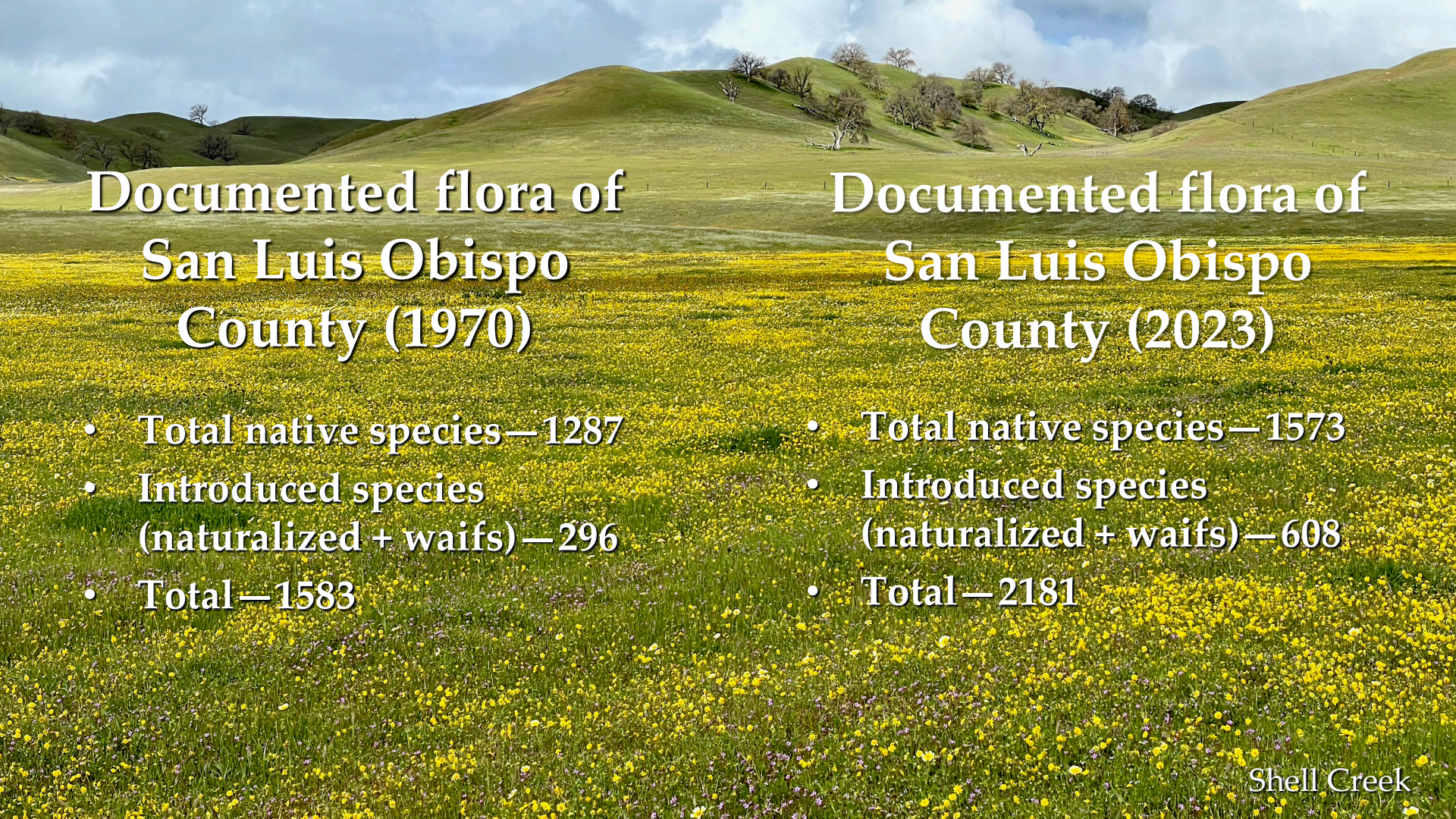
Features of the Flora

- Selective use of terminology
- Detailed glossary of terms used

Glossary

abaxial—the side of an organ away from the axis to which it is attached (e.g., the undersurface of a leaf).
aberrant—differing from the form normal or usual for a taxon.
achene—a single-seeded, indehiscent, dry fruit with the seed coat free from the pericarp.
acuminate—tapering to a point with the angle becoming progressively smaller.
acute—forming an angle less than 90 degrees, sharp-pointed.
adaxial—the side of an organ toward the axis to which it is attached (e.g., the upper surface of a leaf).
adherent—two or more structures of different kinds clinging together or growing together during development, but not truly adnate.
adnate—the fusion of unlike parts (e.g., stamens adnate to petals); the opposite of free.
adult leaves—leaves formed on later-developing branches in some species that differ markedly from juvenile leaves borne on early-formed branches (e.g., alternate, petioled, lanceolate adult leaves of *Eucalyptus globulus* contrasted with opposite, sessile, ovate juvenile leaves). Note that individual leaves do not change from one to the other, but leaves of intermediate morphology are sometimes formed.
aggregate fruit—the ripened product of two or more distinct ovaries from a single flower, sometimes ripening together with tissue not derived from the ovary (e.g., fleshy receptacle of a strawberry, fleshy hypanthium of a rose hip).
alternate—type of leaf arrangement characterized by one leaf per node, the most common condition.
annual—an herbaceous plant that grows from seed, reproduces, and then dies in one growing season, usually in less than one calendar year.
anther—the pollen-bearing portion of a stamen, composed of one or two pollen sacs joined to a connective, in most plants borne at the end of a filament.
anthesis—the time during which flowers are open.
apical placentation—a placentation type found in both simple and compound ovaries in which one or more seeds or ovules are attached in the distal most part of an ovary.
appressed—lying flat against a surface.
aquatic—a plant living in or on water for much or all of its life.
armed—bearing spines, thorns, prickles, or bristles.
ascending—angled or curved upward from the base or point of attachment.
auricles—in Poaceae, lobe-like projections of the sheath margin opposite the attachment of sheath and blade.
awl-like—descriptive of structures (e.g., leaves) that are short and thick, tapering to a point; resembling the tip of a leather-punch.
awn—a stiff, bristle-like structure; used in Asteraceae for stout, bristle-like or hard, needle-like pappus elements; used in Poaceae for bristly appendages often borne on glumes and/or lemmas.
axil—upper angle between a petiole (or other lateral structure) and the stem (or axis) to which it is attached.
axile—a placentation type found in compound ovaries in which the placental area of the ovary is attached to an axis derived from the connate margins of the component carpels. Such an ovary is divided into two or more locules by septa.
axillary bud—a bud borne in a leaf axil (lateral bud); branches arise from axillary buds.
axis (pl. axes)—The compact to ± elongated middle of a structure to which parts are attached (e.g., rachis of a compound leaf, receptacle of a flower, center of a compound ovary).
banner—in Fabaceae, the uppermost petal of a bilateral corolla.
basal leaves—leaves attached at the ground level to the base of a stem or to a below-ground stem or rhizome, apparently arising directly from the ground.

basal placentation—a placentation type found in both simple and compound ovaries in which one or more seeds or ovules are attached at the bottom of an ovary.
beak—a ± elongated, usually non-seed-bearing, distal portion of an ovary, as in Geraniaceae and some Brassicaceae; in some Asteraceae, the pappus is borne at the end of a slender beak on the achene.
bearded—bearing coarse hairs, often in tufts or patches.
bell-shaped—used to describe a corolla (calyx, hypanthium, involucre) with the shape of a bell, the tube very short or absent and the distal portion widely expanded.
berry—a pulpy or fleshy indehiscent fruit without a stony center; berries may be derived from simple or compound ovaries and contain one to many seeds.
biconvex—lens-shaped; ± flattened but convex-curved on both surfaces.
biennial—an herbaceous plant that requires two years to complete its life cycle; in the first season germination is followed by vegetative growth only, with accumulation of stored food reserves; in the second season the plant has additional vegetative growth, forms flowers and fruits, and then dies.
bilateral—type of symmetry, used to describe flowers that can be divided into mirror images only by a line drawn vertically, with the left side of a flower a mirror image of the right side—the flower has only one line of symmetry; contrast radial, isobilateral.
bisexual flower—a flower with one or more pollen-producing stamens and one or more ovule-producing pistils; contrast pistillate and staminate flowers.
blade—The flattened, expanded part of a leaf, sepal, petal, etc.
bract—(1) a modified leaf associated with flowers; it differs from the foliage leaves in size, shape, color, texture, or some other features; (2) the dry, often quite small, leaf-like structure that subtends a cone scale in Pinaceae and other conifer families; (3) in compound umbels of Apiaceae, bracts form an involucre subtending the rays (primary branches) of the compound umbel.
bractlet—(1) a small bract; often used for any secondary bracts; (2) in compound umbels of Apiaceae, bractlets form involucels subtending the umbellets of a compound umbel.
branch—a lateral stem axis arising from an axillary bud on another stem axis.
branchlet—a small branch or division of a larger branch.
bristle—(1) a stiff hair, sometimes slender throughout, sometimes enlarged at base; (2) in Asteraceae, a fine, ± cylindric or minutely flattened pappus element, or appendage on the receptacle.
bud—an undeveloped or embryonic stem that usually occurs in a leaf axil or at the tip of a stem; vegetative buds that break dormancy grow into branches; in reproductive parts of a plant, buds may develop into inflorescences, flower clusters, or individual flowers.
bulb—a short, vertical, underground stem with fleshy storage leaves.
bulblet—small bulbs or corms that form as offshoots from underground parts, in leaf axils, or in place of flowers in inflorescences; dispersal of bulblets is a means of vegetative reproduction in some plants.
bur—fruiting structure covered with spines or prickles, often serving as a unit of dispersal.
burl—swollen woody stem base in some woody plants (e.g., some *Arctostaphylos* species that may survive a fire, enabling the plant to regrow in place).
callus—in Poaceae, a hardened structure at the base of a floret that is often covered with hairs or bristles.
calyx (pl. calyces)—the collective term for all the sepals of a flower; the outermost whorl or spiral of flower parts; the perianth when only one whorl is present.
calyx lobes—the unfused distal portions of the sepals comprising a calyx of connate sepals.
canescent—bearing grayish or hoary pubescence.
capsule—a dry, dehiscent fruit derived from a compound ovary, extremely variable in size, shape, number of seeds, and nature of dehiscence.



Documented flora of San Luis Obispo County (1970)

- Total native species—1287
- Introduced species (naturalized + waifs)—296
- Total—1583

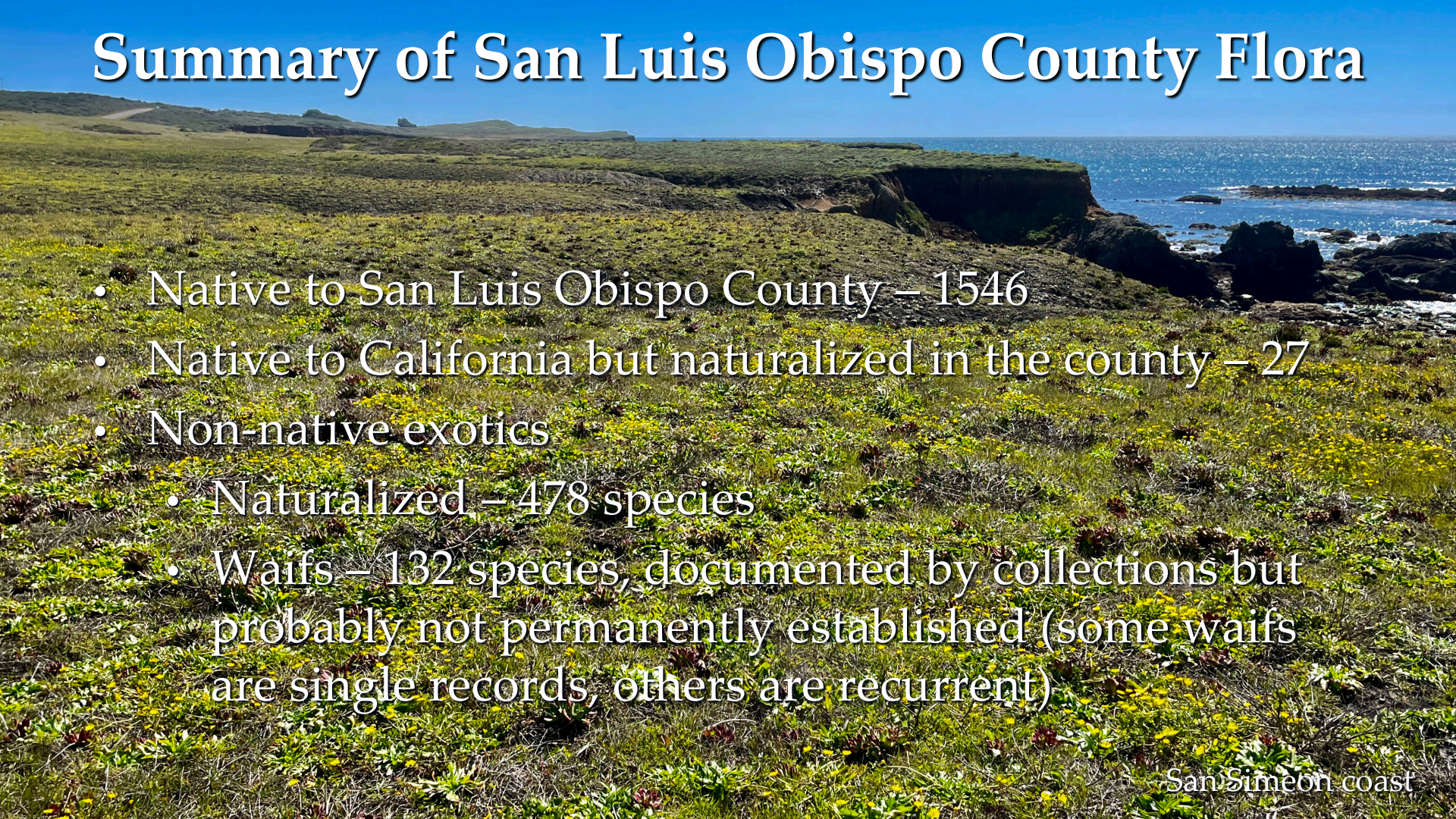
Documented flora of San Luis Obispo County (2023)

- Total native species—1573
- Introduced species (naturalized + waifs)—608
- Total—2181

Shell Creek

Summary of San Luis Obispo County Flora

- Native to San Luis Obispo County – 1546
- Native to California but naturalized in the county – 27
- Non-native exotics
  - Naturalized – 478 species
  - Waifs – 132 species, documented by collections but probably not permanently established (some waifs are single records, others are recurrent)


San Simeon coast

Rare Plants

- Rare plants occur in various areas of the county, from the coast to the interior.
- California Rare Plant Rank
  - 1B – 123
  - 2B – 2
  - 3 – 2
  - 4 – 65

Carrizo Plain

Layia munzii
Munz's Tidytips

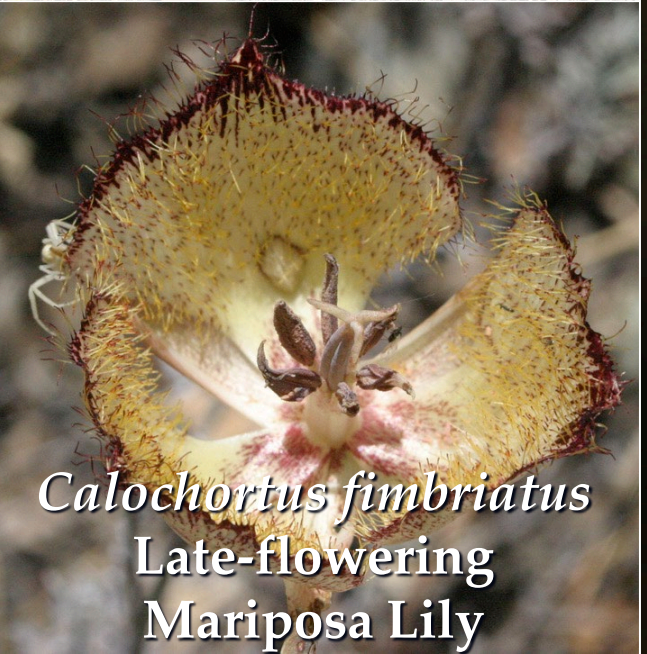
San Luis Obispo County Plants New to Science

Chorizanthe aphanantha
Irish Hills Spineflower

Pedicularis rigginsiae
Arroyo de la Cruz

Native Species added to San Luis Obispo County flora

Calyptridium parryi
Parry's Pussypaws



Calochortus fimbriatus
Late-flowering Mariposa Lily

Carex hassei
Hasse's Sedge

Sidalcea hickmanii subsp. *hickmanii*
Hickman's Checkerbloom

Interesting Rediscoveries in San Luis Obispo County

Eschscholzia rhombipetala
Diamond-petaled California Poppy

Pediomelum californicum
California Indian Breadroot

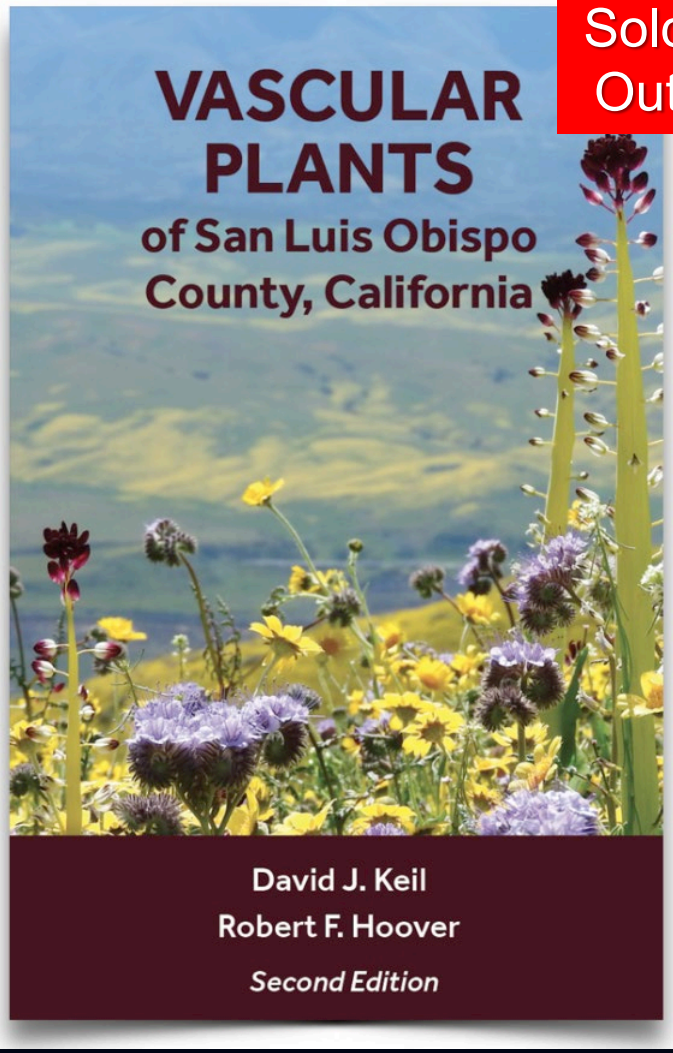
A Flora is Never Complete

- There will be new discoveries
- Taxonomists will continue to investigate relationships
- And name changes will happen

- And it's already happening
- Goodby *Brassica nigra* and *Sinapis arvensis*
- Hello *Rhamphospermum nigrum* and *Rhamphospermum arvense*

The Flora in eBook Format

- The flora has been so well received that hard copies of the flora are currently sold out.
- We are working to line up a printer for a second printing (a long story . . .).
- But the flora is now available in ebook format from Pacific Street Publishing.
- Scan the QR code below for a link to order information for the eflora.




So many places . . .
So many flowers . . .
So, visit San Luis Obispo County . . .
Take a hike . . .
Or take a drive . . .
And take some time . . .
To enjoy the flowers
Caliente Range