

Inspirations and Development of  
A Flora of Napa County  
and Some Lessons Learned

**Jake Ruygt – *Napa Botanical Survey Services***

How long does it take to write a county flora ? **It's a process!**

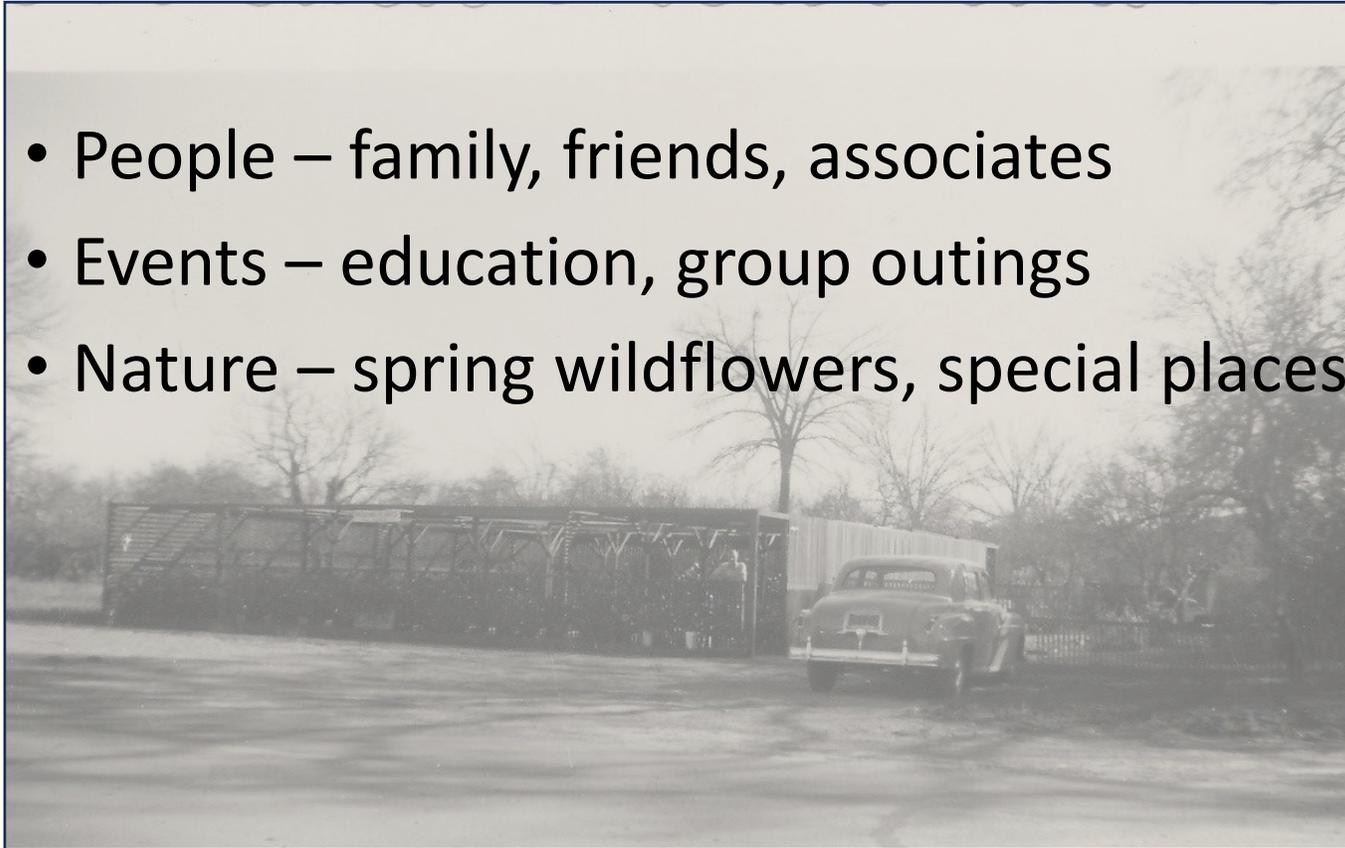
Inspiration  
Learning the flora  
Data Collection  
Building a Database  
Designing a Flora  
Review and review  
Book Design  
Publication



*Oat Hill Mine Rd  
Book Cover Image*

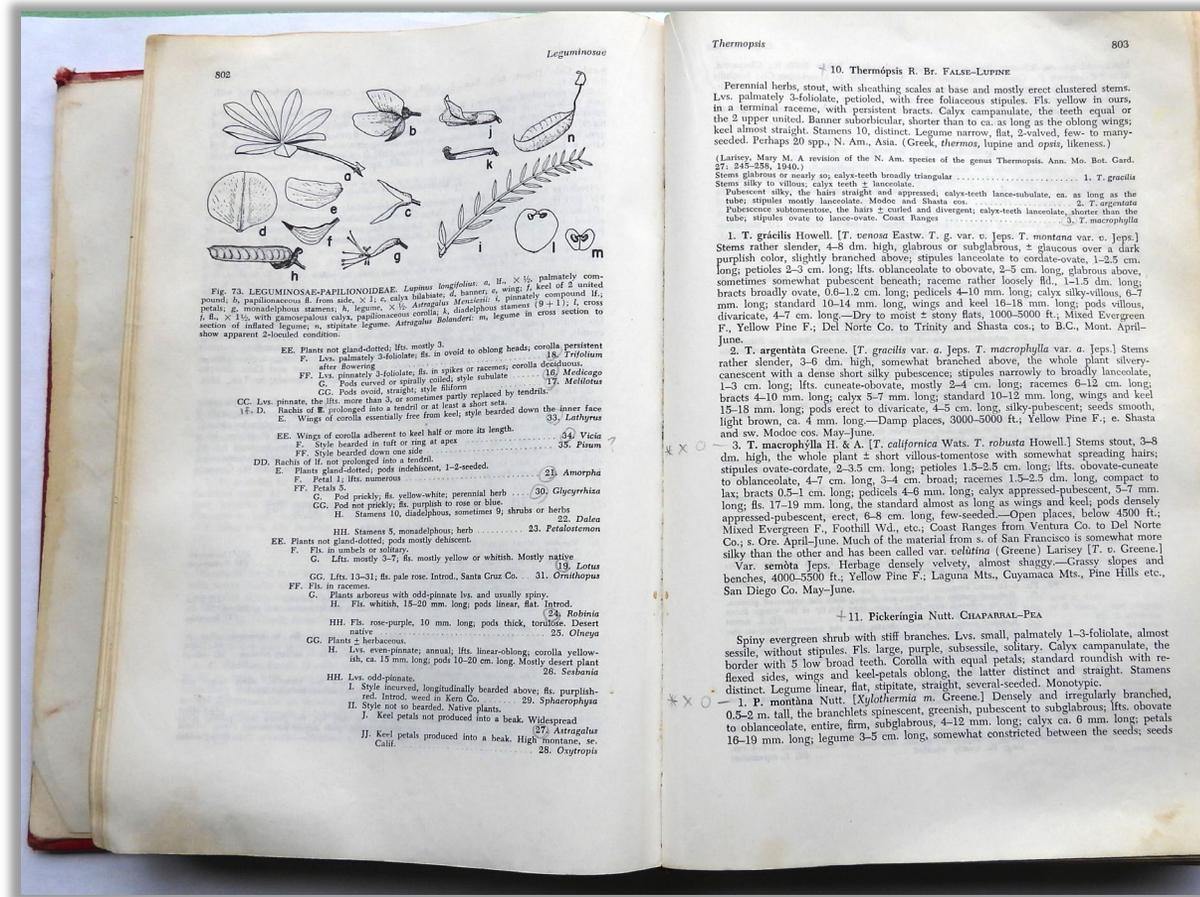
# Inspiration - it comes from many places

- People – family, friends, associates
- Events – education, group outings
- Nature – spring wildflowers, special places



# Education: Plant Taxonomy, Plant Ecology

## A California Flora by Munz and Keck was the standard in 1975



Markings indicate probable (-) and confirmed (X) occurrence in Napa County

There was an abundance of wildflowers in and around the City of Napa in 1976. I began to explore fields, roadsides.

South of Napa city, now industrial park, 1981

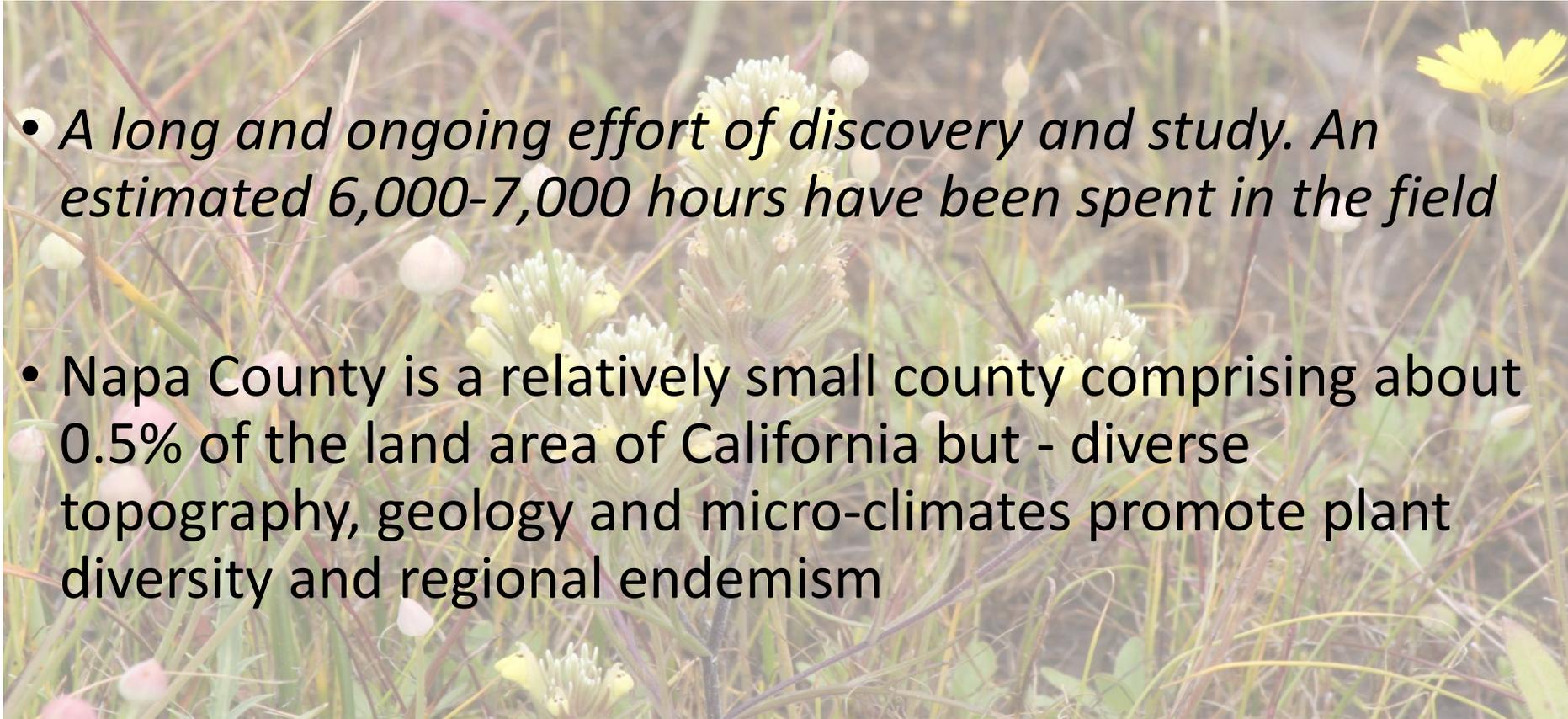


Suscol Hill, now site of Meritage Hotel, 1981

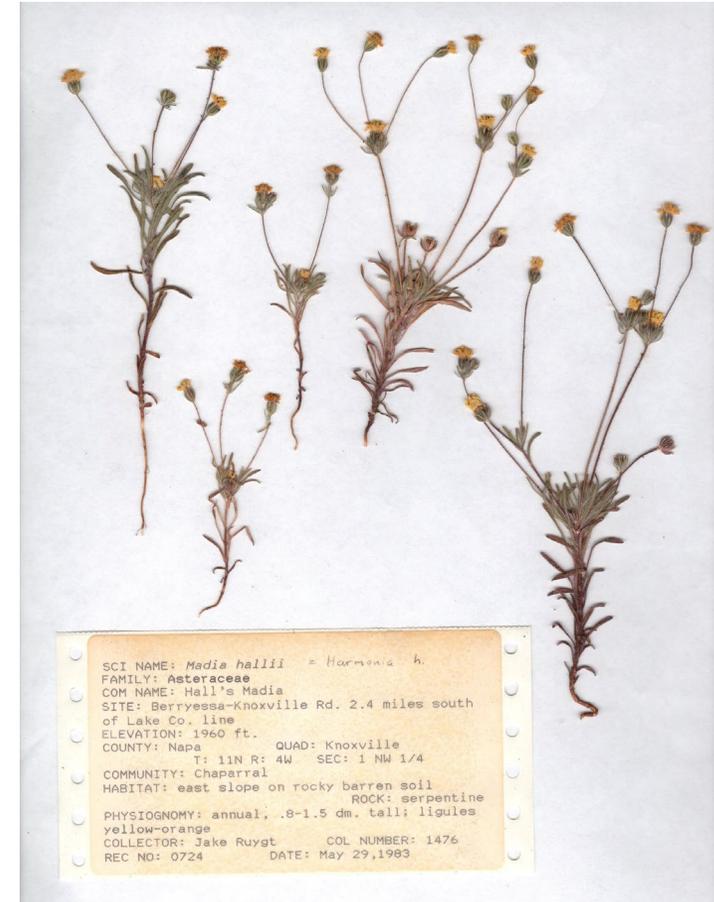


## Becoming familiar with the local flora

- *A long and ongoing effort of discovery and study. An estimated 6,000-7,000 hours have been spent in the field*
- Napa County is a relatively small county comprising about 0.5% of the land area of California but - diverse topography, geology and micro-climates promote plant diversity and regional endemism



# A plant press preserves specimens, allowing for later study



Over 7300 collections to date, 3442 donated to U.C. herbaria

Pressing specimens is an essential way to support the occurrence of species in a geographic location. They can be studied to re-visit determinations. Sometimes surprises come to light!

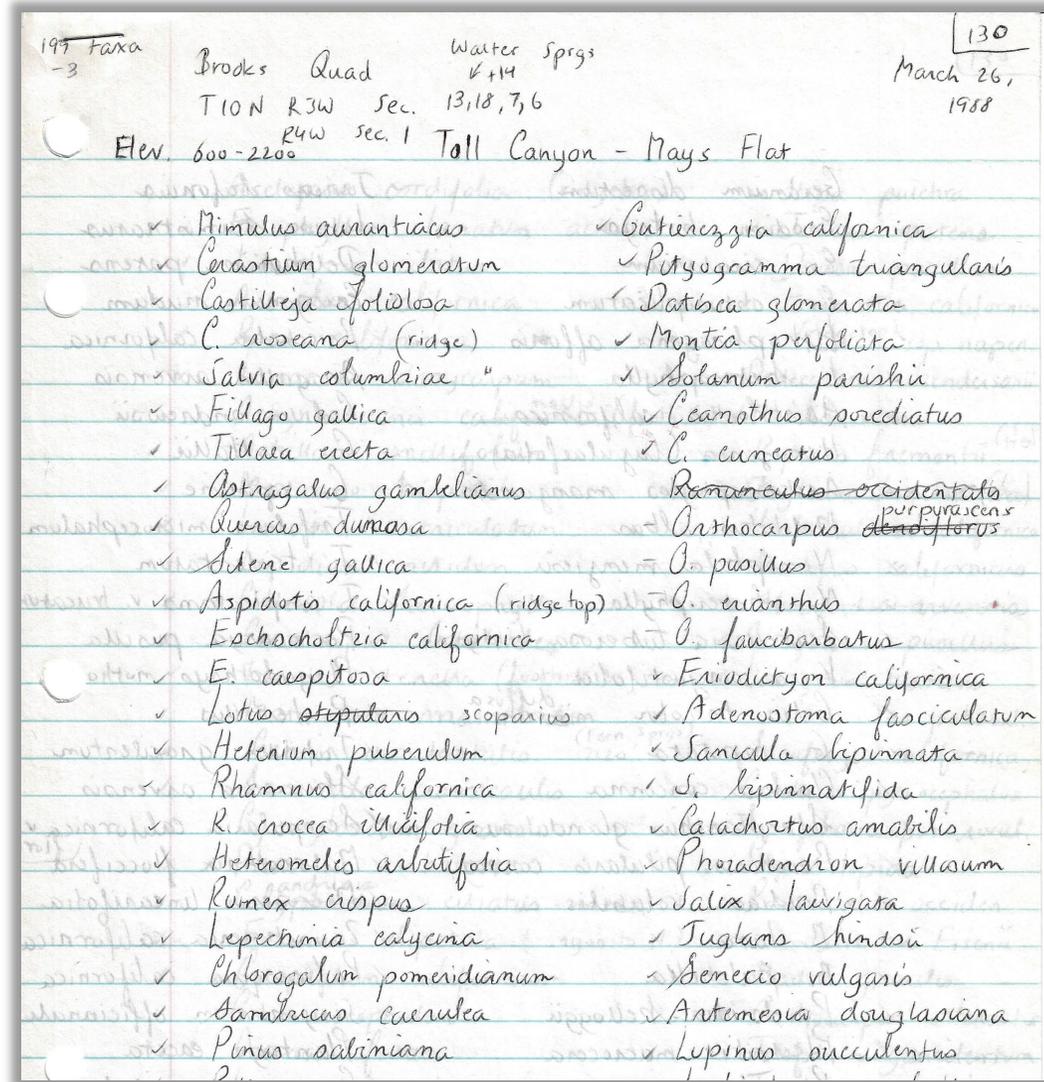


# Checklists

Over 200 hand written lists were developed (1979-96) from vegetation **sampling** at numerous locations.

The **computer** made the task of making Checklists much easier in the 1990s.

Acquiring a **GPS receiver** allowed for more precision in recording locations in 2001



CNPS spring scheduled Wildflower Walks provided a good opportunity for learning and sharing.



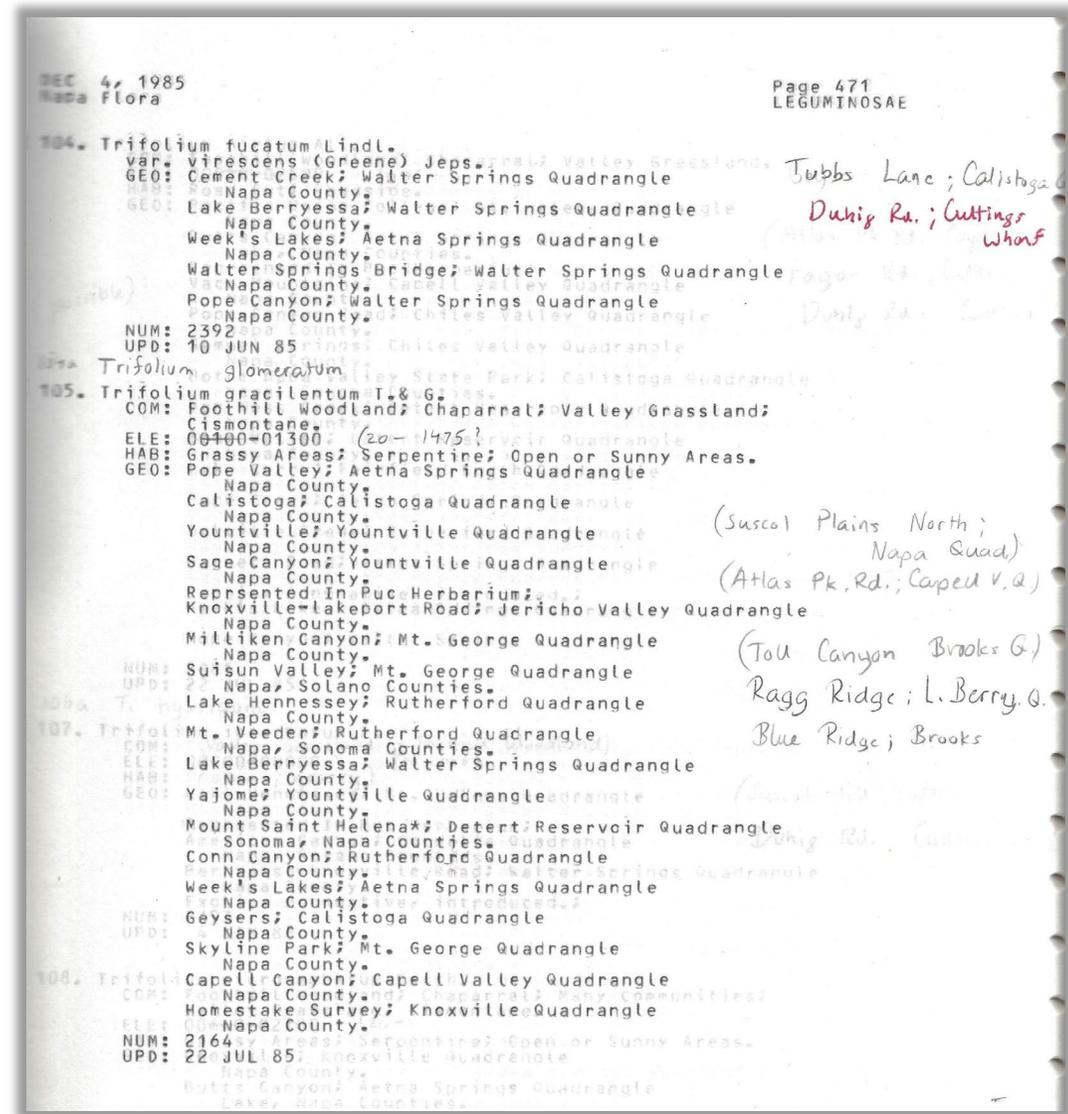
CNPS outing,  
2001

Pacific Union College, Dec.  
1985 printout of *Napa Flora*

Specimen Label Information  
Directory (SLID)

By: Dr. Gilbert Muth, Don Hemphill  
and Joe Callizo ---- contributions by,  
Glen Clifton, Richard Weston, Bill  
Grummer, Jake Ruygt

Developed in 1978 with  
approximately 600 taxa, SLID  
expanded to about 1565 taxa with  
confirmed occurrences by 1985.



Relationships with landowners created through CNPS hikes -

Large landownerships such as the Livermore Ranch, Mead Ranch and Land Trust of Napa County *permanent preserves* provided a wealth of data to *A Flora of Napa County*

*Montesol*



In 1988, contracting as a consulting botanist opened new opportunities to study/inventory extended properties.



To date over  
45,000 acres have  
been studied by:

*Napa Botanical  
Survey Services*

Field data collection is the foundation of a flora-

- After the Pacific Union College Database had a *system failure*, the data I was accumulating needed a place to go -
- I continued to enter data of new species and significant plant populations in my printed copy of the SLID Database -
- The value of a *flora versus a database was pondered* while I waited for PUC to restore the database

About 1990, I embarked on creating my own database

The First edition of this database was printed in 1992

The nine data fields included:

Morphology

Habitat

Distribution

Elevation Range

Plant Community

Blooming Period

Nativity

Napa County Flora  
FAMILY: POLYPODIACEAE Species: *Polypodium californicum* = *slayrrhiza* add *Polypodium californicum* ✓  
Common Name: California Polypody Blooms: fronds 1-3.5 dm. tall; epiphytic or? add scouleri? (rekey specimens)  
Physiology: perennial with creeping rhizomes, forms colonies;  
Habitat: Grows on shaded slopes and tree trunks; streambanks; moist, rocky places; all substrates? - *gerardii*  
Range: Common, occurs on all ranges throughout county, and also occasional in valleys  
Elev: 80-3010 ft. Community: M.E.F.; F.W.; Red.F.; Rip.Wd.; Chap. Origin: native  
OTHER\_DATA also common in valleys of only in stream corridors?  
=====  
FAMILY: PTERIDACEAE Species: *Adiantum jordanii* add *Polypodium californicum* ✓  
Common Name: California Maidenhair Fern Blooms:  
Physiology: perennial, fronds 2-5 dm. long; sori appear marginal  
Habitat: Grows on shaded slopes and on streambanks; canyons; all substrates  
Range: Fairly common, occurs on all ranges throughout county  
Elev: 230-2500 ft. Community: M.E.F.; Doug.F.F.; Red.F.; No.Oak Wd.; Origin: native  
OTHER\_DATA add F.W.; Chap. F.W.  
=====  
FAMILY: PTERIDACEAE Species: *Adiantum pedatum* var. *aleuticum*  
Common Name: Five-Finger Fern Blooms:  
Physiology: perennial, fronds 2-5(8?) dm. long; sori linear to lunate  
Habitat: Grows on steep slopes, rocky, wet places; springs, waterfalls in shaded canyons  
Range: Uncommon, localized, occurs in scattered locations on Napa and Mayacamas Ranges  
Elev: 300-1500 ft. Community: M.E.F.; Doug.F.F.; Red.F. Origin: native; widespread  
OTHER\_DATA Chap.?  
=====  
FAMILY: PTERIDACEAE Species: *Aspidotis californica*  
Common Name: California Lace Fern Blooms:  
Physiology: perennial, fronds 1-3.5 dm. long; sori lunate on vein tip  
Habitat: Grows in rocky areas, from under boulders or in crevices of rock outcrops; sun to partial shade; all substrates  
Range: Not common but widespread, occurs on all ranges throughout county  
Elev: 600-2700 ft. Community: M.E.F.; F.W.; Chap. Origin: native  
OTHER\_DATA other communities? 300'  
=====  
FAMILY: PTERIDACEAE Species: *Cheilanthes gracillima*  
Common Name: Lace Fern Blooms:  
Physiology: perennial, fronds many, 10-25 cm. long; stipes dark brown blades dull yellowish-green  
Habitat: Grows on rocky slopes, crevices of rocks; open sun  
Range: Rare in Napa County, known only from Mt. St. Helena  
Elev: 1500-3700 ft. Community: Chap.; Vel.P.F. Origin: native; widespread  
OTHER\_DATA are locations under C. covillei this species? Add?  
=====  
FAMILY: PTERIDACEAE Species: *Cheilanthes intertexta*  
Common Name: Coastal Lip Fern Blooms: brown; blades dark green above  
Physiology: perennial, fronds many, 8-25 cm. long; stipes purplish rock outcrops  
Habitat: Grows in rocky slopes, crevices of rocks; open sun serp or vole. Sage Canyon  
Range: Uncommon, known from few scattered locations, Mt. Veeder, Mt. George north to Mt. St. Helena and Adams Ridge  
Elev: 800-2400 ft. Community: Chap.; M.E.F. Origin: native Knoxville  
OTHER\_DATA this species 'doubtfully distinct from' C. covillei  
=====  
FAMILY: PTERIDACEAE Species: *Onychium densum* = *Aspidotis densa*  
Common Name: Indian's Dream, Cliff-Brake Blooms: 8-20 (30?) cm. long; creeping rhizomes  
Physiology: perennial, fronds many, 8-25 cm. long; stipes purplish  
Habitat: Grows in rocky slopes, from under rocks; open sun; serpentine  
Range: Not common but widespread on serpentine outcrops throughout county, except American Canyon  
Elev: 600-2420 ft. Community: Chap. Origin: native; widespread  
OTHER\_DATA off serpentine outside of county serp. vld.?  
=====  
FAMILY: PTERIDACEAE Species: *Pellaea andromedaefolia*

A Second Draft of my database was completed in 1996

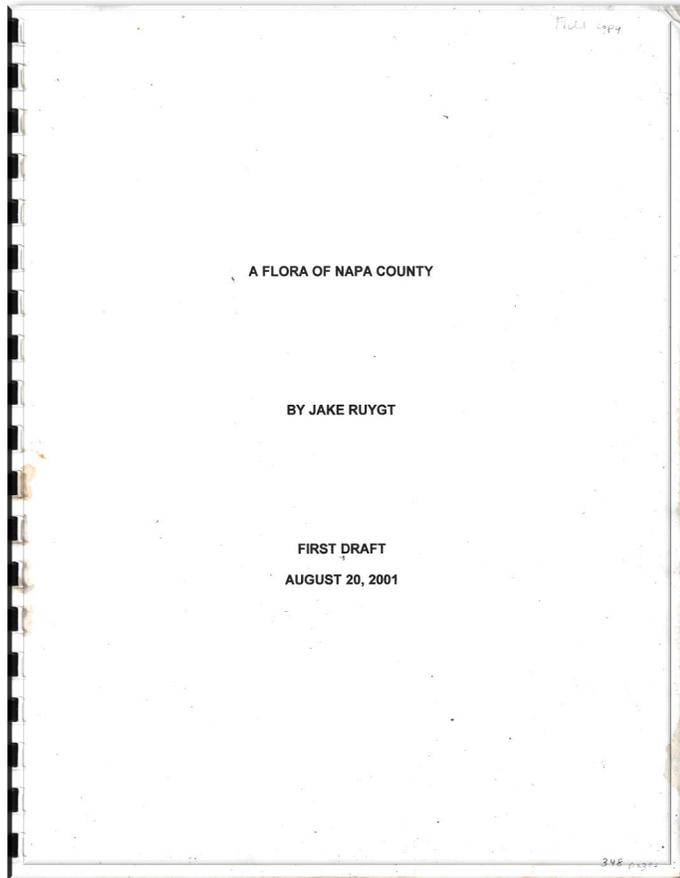
Includes twelve data fields

Circled numbers at right indicate a slide image captured and in my files.

Small floral symbol at left indicated an illustration has been drafted on the page number shown.

	<p><b>PHYSIOG:</b> Perennial herb, 1.5-7 dm. tall; ray flowers yellow to rarely whitish; leaves all basal, long.</p> <p><b>HABITAT:</b> Grassy areas on open to wooded slopes, rarely in moist flat fields.</p> <p><b>RANGE:</b> Fairly common, occurs throughout county; the form with entire leaves found in Napa Valley is probably extinct.</p> <p><b>ELEV:</b> 20-2040 ft.      <b>COMMUN:</b> M.E.F.; F.W.; Co.Pr.; V.G.</p> <p><b>OTHER DATA:</b> upper elev.? Chap.? compare to A. apargioides (possible Mt. Millh)</p>	<p><b>SPECIES:</b> Agoseris heterophylla</p> <p><b>COM NAME:</b> Annual Mountain Dandelion</p> <p>linear to incised; flowers yellow.</p> <p>ridges; all substrates but most common on serpentine.</p> <p>etc.; upper Napa Valley; also Napa and Vaca Ranges.</p> <p><b>ORIGIN:</b> native</p> <p><b>BLOOMS:</b> May-July</p>	<p>linear or pinnate</p> <p>9. collection Blue Ridge 10 A. det. by strat! ok 1-26-9</p>
24 needs work	<p><b>FAMILY:</b> ASTERACEAE</p> <p><b>MUNZ:</b></p> <p><b>PHYSIOG:</b> Annual herb, 0.8-3 dm tall; leaves basal, variable,</p> <p><b>HABITAT:</b> Open, grassy, rocky, pastures and meadows; valleys and</p> <p><b>RANGE:</b> Not common, localized in Pope Valley, Snell Valley, Wooden V.</p> <p><b>ELEV:</b> 20-2700 ft.      <b>COMMUN:</b> F.W.; Chap.; V.G.; M.E.F.</p> <p><b>OTHER DATA:</b> July? also Napa V. at Lewelling</p>	<p><b>SPECIES:</b> Agoseris heterophylla</p> <p><b>COM NAME:</b> Annual Mountain Dandelion</p> <p>linear to incised; flowers yellow.</p> <p>ridges; all substrates but most common on serpentine.</p> <p>etc.; upper Napa Valley; also Napa and Vaca Ranges.</p> <p><b>ORIGIN:</b> native</p> <p><b>BLOOMS:</b> April-June</p>	
(21) (66) (59)	<p><b>FAMILY:</b> ASTERACEAE</p> <p><b>MUNZ:</b></p> <p><b>PHYSIOG:</b> Perennial herb, 2-6 dm tall; stems woolly, at least</p> <p><b>HABITAT:</b> On wooded slopes or in forest understory; partial sun;</p> <p><b>RANGE:</b> Not common, found from Howell Mtn north on the Napa Range and</p> <p><b>ELEV:</b> 500-2400 ft.      <b>COMMUN:</b> M.E.F., F.W.</p> <p><b>OTHER DATA:</b> elev. near Calistoga, other communities?</p>	<p><b>SPECIES:</b> Agoseris retrorsa</p> <p><b>COM NAME:</b> Spear Leaved Agoseris</p> <p>when young; leaf divisions point toward base; flw yellow.</p> <p>dry grassy or sparsely vegetated; igneous or sediment.</p> <p>on the Vaca Mtns south of Monticello Dam.</p> <p><b>ORIGIN:</b> native</p> <p><b>BLOOMS:</b> May-June</p>	
(118) (82)	<p><b>FAMILY:</b> ASTERACEAE</p> <p><b>MUNZ:</b></p> <p><b>PHYSIOG:</b> Perennial herb, 6-10 dm. tall; forms extensive colonies</p> <p><b>HABITAT:</b> In valleys on flat land, deep clay soils; along stream</p> <p><b>RANGE:</b> Most common in Napa Valley south of Napa but also found in</p> <p><b>ELEV:</b> 10-700 ft.      <b>COMMUN:</b> V.G.; F.W.; Co.S.M.</p> <p><b>OTHER DATA:</b></p>	<p><b>SPECIES:</b> Ambrosia psilostachya</p> <p><b>COM NAME:</b> Western Ragweed</p> <p>from spreading rootstock; corolla lacking.</p> <p>banks.</p> <p>Pope, Capell, and Berryessa Valleys.</p> <p><b>ORIGIN:</b> native</p> <p><b>BLOOMS:</b> July-Nov.</p>	
101	<p><b>FAMILY:</b> ASTERACEAE</p> <p><b>MUNZ:</b> Stylocline filaginea =</p> <p><b>PHYSIOG:</b> Annual with gray hairy stems, 5-15 cm tall; bracts</p> <p><b>HABITAT:</b> Dry rocky, brushy slopes; often on serpentine but also on</p> <p><b>RANGE:</b> Not common, known from Napa and Hood Ranges, also Knoxville</p> <p><b>ELEV:</b> 300-2250 ft.      <b>COMMUN:</b> Chp.; F.W.; V.G.</p> <p><b>OTHER DATA:</b> Sediments? Elev.s?</p>	<p><b>SPECIES:</b> Ancistrocarpus falagineus</p> <p><b>COM NAME:</b> Hooked Cottonweed, Woolly Fish</p> <p>boat shaped; flowers 5-9 per head, inconspicuous.</p> <p>volcanics.</p> <p>area.</p> <p><b>ORIGIN:</b> native (Calif. endemic)</p> <p><b>BLOOMS:</b> April-May</p>	
(26) (21)	<p><b>FAMILY:</b> ASTERACEAE</p> <p><b>MUNZ:</b></p> <p><b>PHYSIOG:</b> Annual with gray hairy stems, 5-15 cm tall; bracts</p> <p><b>HABITAT:</b> Dry rocky, brushy slopes; often on serpentine but also on</p> <p><b>RANGE:</b> Not common, known from Napa and Hood Ranges, also Knoxville</p> <p><b>ELEV:</b> 300-2250 ft.      <b>COMMUN:</b> Chp.; F.W.; V.G.</p> <p><b>OTHER DATA:</b> Sediments? Elev.s?</p>	<p><b>SPECIES:</b> Anthemis cotula</p> <p><b>COM NAME:</b> Mayweed</p>	
39	<p><b>FAMILY:</b> ASTERACEAE</p> <p><b>MUNZ:</b></p> <p><b>PHYSIOG:</b> Annual with gray hairy stems, 5-15 cm tall; bracts</p> <p><b>HABITAT:</b> Dry rocky, brushy slopes; often on serpentine but also on</p> <p><b>RANGE:</b> Not common, known from Napa and Hood Ranges, also Knoxville</p> <p><b>ELEV:</b> 300-2250 ft.      <b>COMMUN:</b> Chp.; F.W.; V.G.</p> <p><b>OTHER DATA:</b> Sediments? Elev.s?</p>	<p><b>SPECIES:</b> Anthemis cotula</p> <p><b>COM NAME:</b> Mayweed</p>	

# The First Draft of Text-file was printed for field use in 2001



Data was moved into a word file

Field copy

= sorrel (Lamin) +/- 140 spp world, 27 Canadian, 4 intro.

**Rumex acetosella** (Sheep Sorrel) Perennial herb with spreading rootstocks, stems erect, 1-5 dm tall; perianth yellow, ageing red; plants forms patches. Grassy places; gravelly or clay soil; fields, meadows, low places, streambank, waste places; slope or flat. Common, occurs throughout the county. 10-2800 ft. VG, ruderal, MEF, DougFF, CoPr. March-August. Naturalized; from SW Europe. other communities? (New, Bothe, Sky, Alt, West, RLS) (1000)

**Rumex conglomeratus** (Clustered Dock) Perennial herb, 7-12 dm tall; panicle leafy; valves of fruit with smooth callosities. Low wet places, marshy places; streambeds and streambanks, seasonal wetlands; grassy or wooded areas. Occasional occurs throughout the county except in the Vaca Mtns.; especially in valleys? 10-2250 ft. RipWd, MEF, FW, FrM. April-October. From Europe. /other communities? to 15 dm. tall? Vaca Mtns? (Bothe) (-5000)

**Rumex crispus** (Curly Dock) Perennial herb, 5-12 dm tall, leaves up to 2 dm long, usually crisped (undulate) on the margin; valves of fruit minutely toothed? Low moist places, marshy places; landscaped places, grassy fields, waste places, streambanks and streambeds, springs, lake margins. Common, occurs throughout the county. 4-2100 ft. Ruderal, CoPr, VG, FW, FrM, RipWd, CoSM, MEF. February-November? Naturalized; from Eurasia. (Used in cooked greens (A)) (Bothe, Sky, Alt, West, New, Knox, RLS) = maritimus in Japan? (-8200)

**Rumex dentatus** [= R. fueginus] (Golden Dock) Annual or biennial, stems erect, 2-6 dm tall; valves of fruit with bristles. Drying margin of ponds, lakes; brackish places. Infrequent; known from two locations at Lake Berryessa, also Knoxville area. 300-450 ft. FrM, ruderal. May-September. Native; widespread. /elev. Knoxville? (Lake Berryessa) (Western D. E. more mountains see opposite)

**Rumex occidentalis** [= R. fenestratus] ("Salt Marsh Dock") Perennial herb, 9-15 dm tall, leaves to 4 dm long, crisped along the margin; panicle dense, the mature fruit bright red. Banks of levees, among bulrushes; brackish tidal marsh. Rare in Napa County, plants thinly scattered in Napa Marsh. 2-4 ft. CoSM. May-September. Native; widespread. /check size etc. don't recall seeing many plants on marsh survey. (-4000)

**Rumex pulcher** (Fiddle Dock) Perennial herb, 3-6 dm tall, upper stems bent horizontally; valves reddish, bearing callosities. Open grassland; gradual slope or flat; clay. Occasional; occurs in valleys, throughout the county. 20-700 ft. VG, Chp. May-September. From Mediterranean region. /other communities or habitats? (Sky, Alt, West, Knox) (-4000)

**Rumex salicifolius var. denticulatus** [= R. californicus] (California Dock) Perennial herb with ascending stems 2-6 dm long, branched below; valves red-brown, toothed. Low seasonally wet fields; heavy clay soil; grassy and wooded areas. Rare in Napa County, few known locations; Napa and Wooden Valleys. 20-700 ft.? VG, ruderal, FW. May-September. Native. /check other locations, size, ID etc. (11, 200)

**Rumex salicifolius var. salicifolius** [= R. salicifolius] (Willow Dock) Perennial herb, 3-9 dm tall, several ascending branches from the base; fruit bearing prominent white callosities; herbage reddish? Moist places, grassy places; gradual slope or flat;

# Dichotomous Keys Were Developed

Based on the format of keys in *A California Flora*, Munz and Keck 1963.

“Keys” were written for all genera with three or more documented species.

A booklet of the keys were shared with a few local CNPS members for review

- D1. Stems erect, straight, 0-few branched; on serpentine. *P. douglasii* ssp. *majus*
- D2. Stems gen. spreading to ascending or curved; not on serpentine?
  - E1. Branches wiry, gen. < 0.5 mm thick.
    - F1. Leaves < 1 mm wide; plants gen. broadly branched. *P. californicum*
    - F2. Leaves > 1 mm wide; plants gen. erect with curved stems. *P. ramossissimum*
  - E2. Branches sturdy, gen. 1 mm thick.
    - F3. Fruit 3.5-4.5 mm long, brown, glossy; salt marsh. *P. marinense*
    - F4. Fruit 2-3 mm long, dark brown, satiny or dull.
      - G1. Flowers longer than the stipules; common weed. *P. arenastrum*
      - G2. Flowers +/- enclosed by the stipules; salt marsh. *P. prolificum*
- A2. Leaves gen. > 5 cm long, or if less then leaves not linear.
- B3. Leaves heart shaped (sagittate); flowers in head-like clusters. *P. convolvulus*
- B3. Leaves lance-shaped; flowers in a raceme, often spike-like. {subgenus *Persicaria*}
- C3. Perianth gland dotted (hand lens).
  - D3. Fruit dark brown, dull; inflorescence dense, spikelike. *P. hydropiper*
  - D4. Fruit black, shiny; inflorescence interrupted below. *P. punctatum*
- C4. Perianth not gland dotted.
  - D5. Perianth whitish to light pinkish; inflor. 2-6 mm wide, open.
    - E3. Fruit 3-angled; stipules hairy (need hand lens); perennial. *P. hydropiperoides* *stipules hairy*
    - E4. Fruit flat, +/- indented; stipules glabrous; annual. *P. lapathifolium*
  - D6. Perianth gen. deep pink or rose; inflor. > 7 mm wide, dense.
    - E5. Inflorescences < 3 cm long, gen. 2+ per stem. *P. persicaria* *stipules hairy*
    - E6. Inflorescences 4-10 cm long, gen. one per stem. *P. amphibeum* var. *emersum*

## Rumex

- A1. Leaves shield shaped, +/- with ears; stems spread by rhizomes. *R. acetosella*
- A2. Leaves linear to lance-shaped; stems not rhizomatous.
  - B1. Stems <sup>or</sup> spreading; stems leafy, not much reduced above.
    - C1. Perianth lobes lacking tubercles in maturity. *R. salicifolius* var. *denticulatus*
    - C2. One perianth lobe with a tubercle > 1/3 width of lobe. *R. salicifolius* var. *salicifolius*
  - B2. Stems gen. erect; basal leaf cluster often present, sometimes withering early.
    - C3. Tubercles lacking; perianth becoming pink; salt marsh. *R. occidentalis*
    - C4. Tubercles 1-3; perianth lobes becoming red-green.
      - D1. Margin of perianth lobes becoming toothed.
        - E1. Plant ... *R. maritimus*

3 tub.  
var. *trans*  
*utrinus*

A Second Draft was completed between Dec 2002 and March 2003

- Voucher data was added for all Special status species and “Napa County Rare” taxa. Codes for occurrences in county parks were added.

on the Napa Range, also on Mt. Hood Range, Knoxville area; reportedly on the Blue Ridge, Napa Valley. 350-2600 (-6000) ft. FW, Chp, VG. Mar-Jun. Native. *Bothe, CedR, Knox, RLS, Sky.*

*Allium bolanderi* S. Watson var. *bolanderi* [*A. bol.*] (Bolander's Onion) Bulb round-ovoid, 7-12 mm long; scapes 1-3 dm tall; lvs. 2-3, withered at flower, 0.5-2 mm wide, gen. cylindrical, nearly as long as scape; perianth rose-purple. Rocky places, north slopes; volcanic and serpentine substrates. Rare in Napa County; Napa Range - Skyline Park (acc. Wise, 1987; Ruygt 1750, JEPS), near Circle Oaks (Crampton 3477, 1956, CAS), Soda Cyn (Doran, Ruygt 4310, 2001), Stags Leap (acc. I. Thomas, 2002), near Rector Dam (acc. Raven, c.1952). 500-1100 (-3000) ft. FW. May-Jun. Native. *Sky.*

- Additional fine tuning to the text information led to a Third Draft by March 2005. Focus was on adding plant morphology data based on data collected in Napa County and described in other floras.

## Data review - This must be comprehensive

### *Confirmation of plant identification required:*

- Review of personal herbarium to confirm identifications cited.
- Personal voucher collections support 1616 of 1695 taxa in the flora.
- Locating and reviewing voucher specimens in various herbaria, some remote.
- Several species considered for inclusion had no supporting voucher collection. This required judgement calls on reliability of some early historic publications and reports.

# Historic Collections and Notes added depth to the flora account

Peter Raven cardfile - circa 1950-51

<p><i>Allium cratericola</i> Eastw. <sup>a acc Owensby</sup>          up Owensby letter vi/12/51          Carter Reg. (11/5)</p> <p style="text-align: center;"><u>SL</u></p>	<p><i>Allium amplexans</i> Torr.          Mt. St. Helena (CAS); Hills. of Napa (CAS)          Alta Pk. Napa (CAS); Cratero (2917);          Soda Canyon; Foss V.</p>
<p><i>Brodiaea coronaria</i> (Salisb.) Engler.          var. <i>macro-poda</i> (Torr.) Hoover  <i>Calistoga Geysers</i> (#2023); Butte Cr.          Napa Jct.</p>	<p><i>Allium serratum</i> Wats. NL? → Fiddenville, Me          Field c. of hy 4 mi S Monticello (MSBL) 1.3 mi S of          Knoxville (CAS); 4 mi S on W V Rd (CAS); c. 2          between Monticello &amp; Pope V (CAS); Samuels Spr.          to Walters Spt. (#5311)</p>

Willis Lynn Jepson notebooks, 1891-1944

John Thomas Howell field notes - 1940

<p>May 19, 1940.</p> <p>Upper St. Helena Creek a. of          "Monticel" (exposed), Napa Co.          15448. <i>Melica Jeyeri</i>.</p> <p>15449. <i>Minulus naevatus</i>.          Leaves much incised or divided</p> <p>15450. <i>Ribes Greeneanum</i>          A few bushes along creek in          shade.</p> <p>On the bankwaters of St Helena          Creek in the "Cute County" a. of          Mt. St. Helena, Napa Co.</p> <p>15451. <i>Fritillaria Purdyi</i>          Capsule subglobose, not angled.</p> <p>15452. <i>Minulus Kelloggii</i></p> <p>15453. <i>Sheptanthera glandulosa</i></p>	<p>May 19, 1940.</p> <p>15454. <i>Minulus cleistogamus</i> = <sup>douglasii or conglomeris</sup>          The cleistogamous <del>minulus</del> <sup>cleistogamus</sup> that          brought me here! <sup>discovered</sup> discovered two          two weeks ago by Maxine Wilkes          + Paul Chinnith of the Sierra Club          Nature Study Group while Miss Wilkes          was collecting seeds for the collection at          the Ferguson Seed Laboratory. The          little plants grow on a rocky          hillside around volcanic boulders          + outcrops and are more conspicuous          in <sup>fact</sup> when the <sup>accrescent</sup> bearded alga          is striped with reddish-purple  <sup>live</sup> lines that were the <sup>shaly</sup> <sup>concrete</sup> fields          of the alga in autumn.  <i>Melica nitens</i> was common in the          vicinity.</p> <p>15455. <i>Sheptanthera</i> = 15453.          Sepals black-purple.</p>
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The Consortium of California Herbaria webpage provided a means to search voucher collection records with a PC from home (coming online circa 2000)

The screenshot shows a web browser window displaying the CCH2 website. The browser's address bar shows the URL <https://cch2.org/portal/collections/list.php>. The website header features the CCH2 logo and the text "Specimen data from the Consortium of California Herbaria". Below the header is a navigation menu with links for Home, Search Collections, Map Search, Checklists, Image Search, Data Use Policy, About CCH, and Help & Resources. There are also links for Log In, New Account, and Sitemap.

The main content area is titled "Specimen Records" and includes tabs for Species List, Occurrence Records, and Maps. The "Species List" tab is active, showing a list of specimen records for *Amorpha californica* var. *napensis*. The records are displayed in a table format with columns for specimen ID, collector, date, and location. The first record is:

Specimen ID	Collector	Date	Location
177207	Eastwood, Alice	1923-05-09	United States, California, Napa County, Calistoga
177208	Abrams, L. R.	1916-07-03	United States, California, Napa County, Road between Calistoga and Petrified Forest
177209	M., C. H.	1907-07-10	United States, California, Napa County, Howell Mt.

The website also includes a search criteria section with the following information:

- Dataset: All Collections
- Taxa: *Amorpha californica* var. *napensis*
- Search Criteria: Napa; excluding cultivated/captive occurrences

The page number is 1, and there are 29 records in total. The browser's taskbar at the bottom shows the Windows logo, several application icons, and the system tray with the date and time (8:27 PM, 12/18/2023).

Lists of data gaps and other questions were developed by continual screening of my flora text files

The lists included questions that require further field work or herbarium research.

Completed questions were checked off the list. Unanswered questions were carried forward to the next list. The lists became shorter but some additional questions generally popped up. This process occurred from 2005 until 2011.

Melica imperfecta – Rare in county? Mt. St. Helena acc.? year? Chap.? Needs confirmation, out of range; send to expert? Lemma supposed to be 3-7, ours 8-9 mm. <sup>Not found, CNPS, CAS Raven card → AAB Map 167?</sup> CAS

Melica subulata – Don't have enough material to confirm? Specimen leaves 1 mm wide, supposed to be 2-10 mm wide. <sup>excluded list?</sup> CAS

Muhlenbergii andina – lemma toothed? <sup>Raven card Napa Co. (AAB Map 9) CAS ✓ No collection confirm (4/11/05)</sup> ✓ Crampton 5450 Capet Cr. 1959 UCD

Muhlenbergii asperifolia - Check ID of Callizo 23755, PUC. Characteristics are: <sup>take Jepson</sup>

Nassella cernua – awns? <sup>45-110mm</sup> cm long. 300-2000 ft.? Leaves 10-? cm long. Bothe? CedR? <sup>Gruman 1495 PUC</sup>

Nassella pulchra – bunches 2-4 dm wide? 10-1150 ft.? Leaves 10-55 cm long? <sup>Raven card → e. of Samuel Springs in poor soil, steep (5332)</sup> CAS ✓ <sup>640' 1800ft? 50'</sup> ✓ <sup>see notes</sup>

Panicum – in key P. hillmanii – lower glume bluntly acute? <sup>short</sup> ✓

Panicum capillare – serpentine and? Alkaline soils? Knoxville area? <sup>OK Dean et al 2002</sup>

Panicum hillmanii – panicle 3-20 cm long. ID uncertain, panicle small. <sup>3 mi N of Mokawite Crater Crampton 8386 (1962) UCD ✓</sup>

Parapholis incurva – include collection #. Community at Knoxville? ✓

Paspalum distichum – describe where the knots are. ✓

Pennisetum clandestinum – leaf blade 1-3 cm long. Inflor a? Spikelets? Uper glume? Upper floret? Blooms? 20-50 ft? <sup>1500ft. end Soda Canyon Rd.</sup>

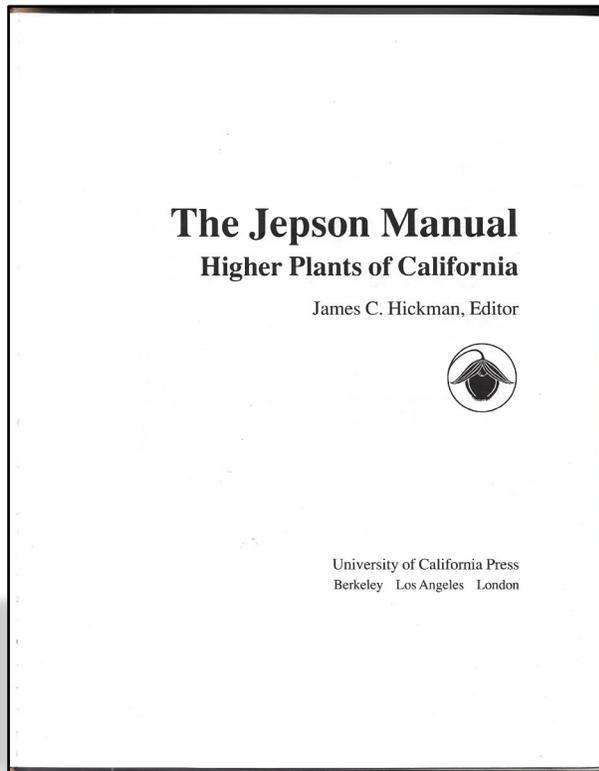
Pennisetum setaceum – Leaves 2-3.5 mm wide? Branches? Fertile floret glumes? Lemma? Mm

Phalaris – add angusta and californica to key?

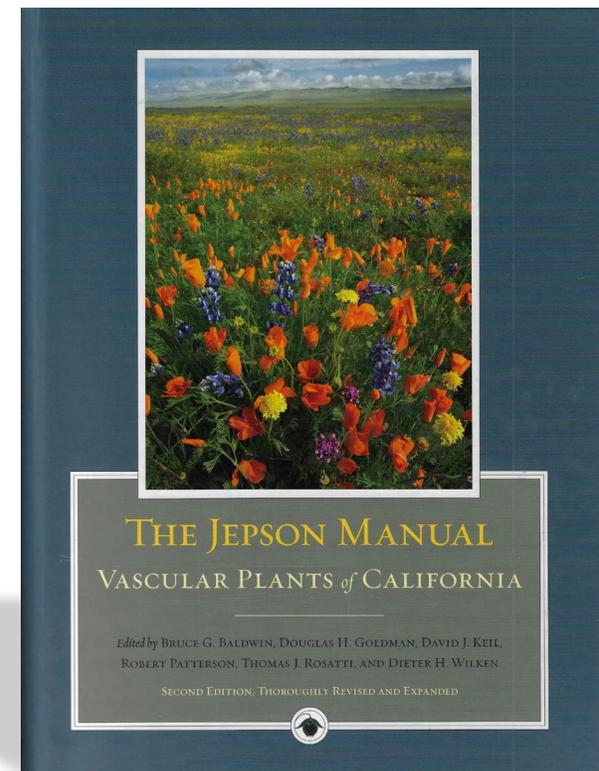
Phalaris angusta – near Calistoga, Tracy 1844, check UCjeps file. My 3348 needs expert <sup>✓ had seen CAS notes</sup>

Publication of updates of the Jepson Manual required changes in taxonomic arrangement and text in my developing Flora

## Jepson 1 - 1993



## Jepson 2 - 2012



## What is included in *A Flora of Napa County*

- Introductory Chapters – *Eleven sections* including 65 pages. Includes information on climate, history, geology, vegetation, invasive species, rare plants and more.
- *Species accounts* 388 pages covering 1695 taxa, 95% are supported by personal voucher collections.
- *Appendices* – Four sections including a list of species confirmed to occur on floor of Napa Valley (this is historic in value); Bird and Mammals associated with the Napa flora; 47 pages
- Maps of geology, vegetation, rainfall, geography

*A Flora of Napa County* is a compilation from many contributors

- Databases and checklists including – Pacific Union College SLID (1,567 taxa), Peter Raven (1,235 taxa), Milo Baker, Jack Major (1,253 taxa)
- Voucher collection records of numerous individuals including - Peter Joe Callizo (1,941), Willis Lynn Jepson (1,678), Peter Raven (1,125), William T. Grummer (1,135), Glenn Clifton (1,083), J.P. Tracy (519)
- Technical expertise - Cynthia Powell (geography map), Jeffrey DeCoursey (illustration digitizing), Beth Hansen-Winter (book design) and others

# 42 Photo Plates display 334 taxa

Over 1200 species were photographed; the Photo Plates focused on:

*Special status species*

*Representative taxa of many genera and families*

*Important invasive species*

*Common and showy species*

**Alphabetic arrangement by Family, genus, species.**



# 49 Illustration Plates Include over 450 taxa

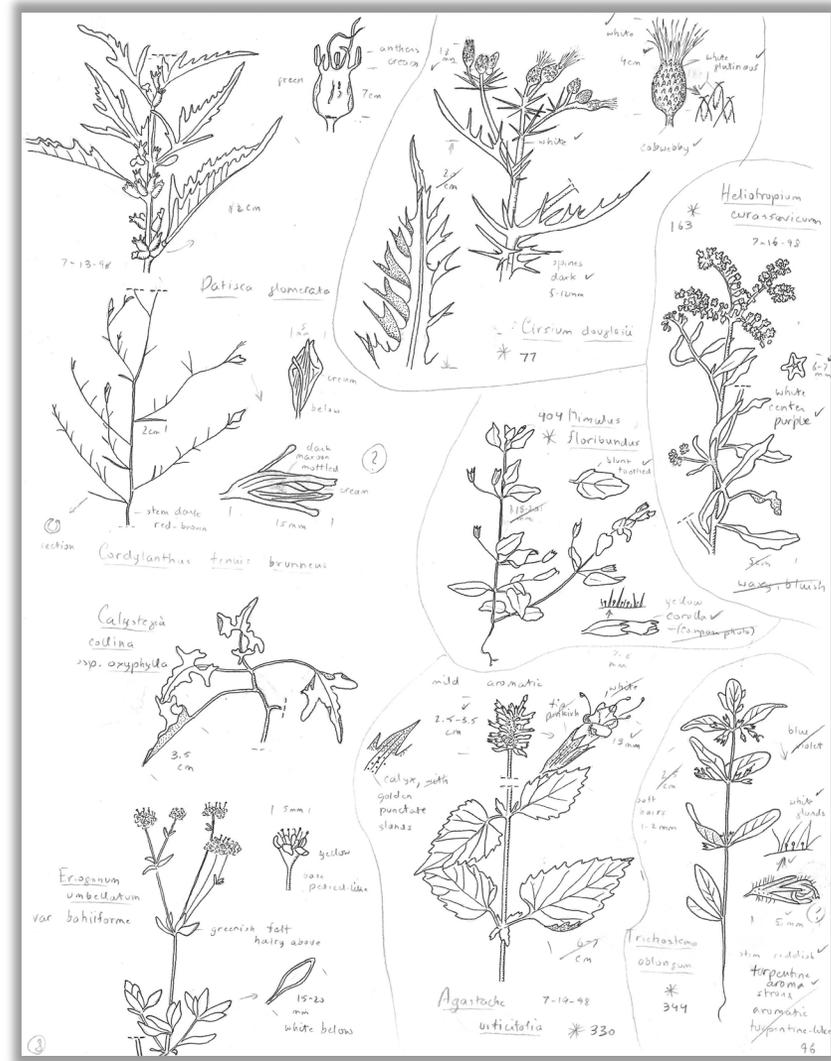
Illustrations were completed over a period of about 5 years and included over 900 entries. The illustrations chosen for the flora plates include:

One or more species from most of the families

Many special status species

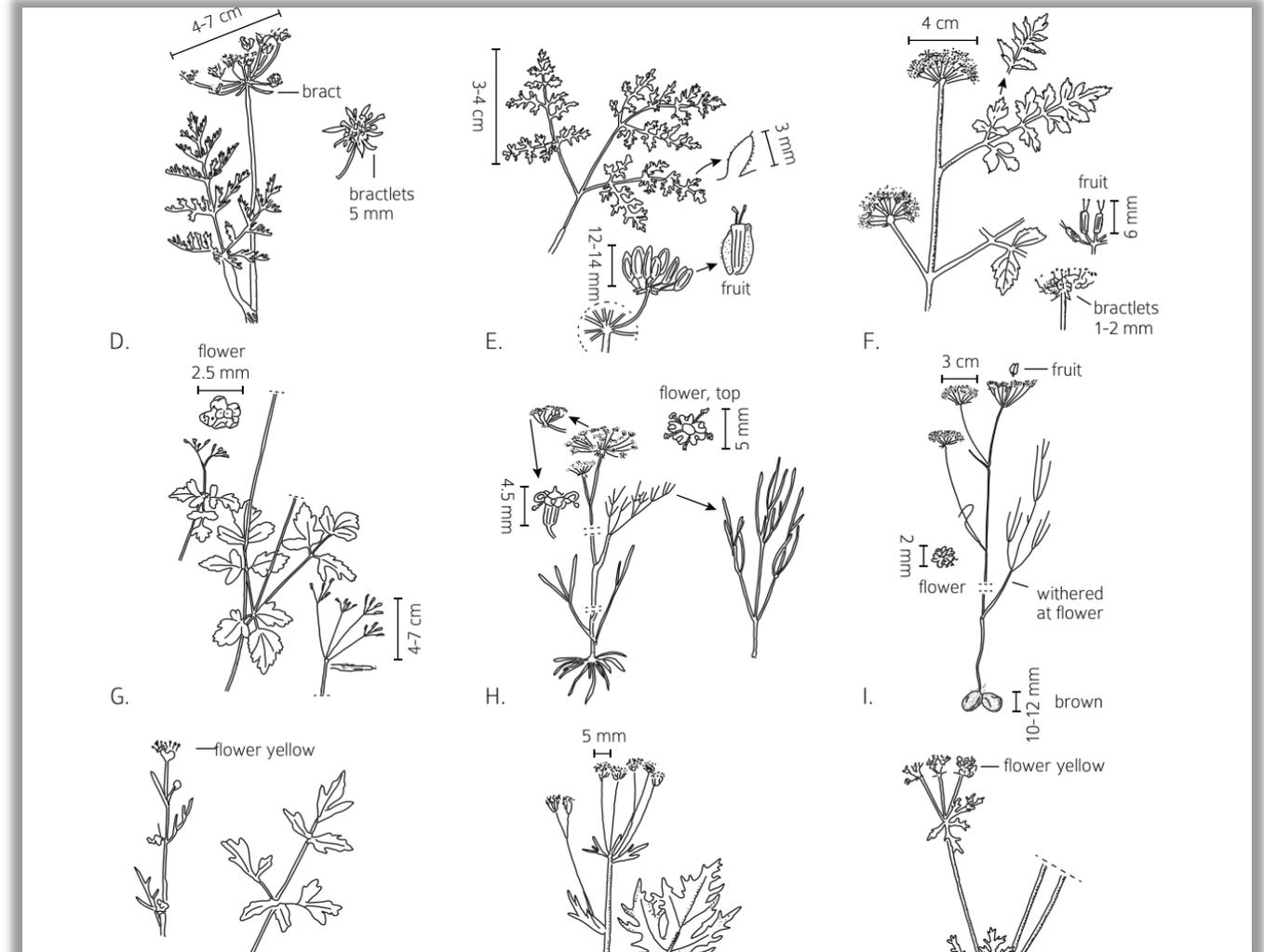
Common species

**The pencil illustrations were over-written in pen. They were later digitized and isolated into individual files.**



The illustrations are arranged in alphabetic order by Family, Genus and Species

Notations were included when first drawn. These were later added in digitally to indicate key characteristics and scale.



Many botanists have contributed to the record through voucher collections

A List of 55 individuals was included in one of the Introductory Chapters - to acknowledge contributions to the knowledge of the flora of Napa County.

The earliest recorded Napa County collections date to the 1840s and 1850s

Over 8000 specimens are on file in various herbaria and support *A Flora of Napa County*

		INTRODUCTION 23
Danish bookkeeper for Truckee Lumber Co. / Napa Valley		
Brandagee, Theresa S.	1888-1911	94
Curator, editor; UC Herbarium /Howell Mtn., Mt. St. Helena [ <i>Sidalcea oregana</i> ssp. <i>hydrophila</i> ]		
Jepson, Willis Lynn	1891-1944	1,678
Professor, UC Berkeley; author <i>A Manual of the Flowering Plants of California</i> , 1923; spent a great deal of time in Napa County / Napa Valley, Howell Mtn., Berryessa Valley, Knoxville		
Chandler, Harley Pierce	1898-1907	110
School teacher, explorer / Howell Mtn.		
Baker, Milo Samuel	1896-1947	150+
Professor of biology at Santa Rosa Junior College		
Tracy, Joseph Prince	1899-1950	519
Title examiner in Eureka, botanist / Napa Valley, Howell Mtn.		
Baker, Charles Fuller	1900-03	31
Botanist, entomologist, teacher of Agronomy / Calistoga, Knoxville		
Eastwood, Alice	1900-39	59
Curator of botany, Calif. Academy of Sciences		
Heller, Amos Arthur	1902-42	34
Editor of <i>Muhlenbergia</i> ; a diligent plant collector [ <i>Downingia pusilla</i> ]		
Hall, Harvey Monroe	1915-23	20
Professor of botany, UC Berkeley [ <i>Harmonia hallii</i> ]		
Ferguson, Elizabeth	1919-20	35
Research Assistant, Dept. of Botany, UC Berkeley		
Mason, Herbert Louis	1923-48	106
Professor of Botany, UC Berkeley, <i>A Flora of Marshes of California</i>		
Bacigalupi, Rimo	1924-67	92
Curator of Jepson Herbarium, UC Berkeley		
Howell, John Thomas	1926-45	86
Botanist, editor; California Academy of Sciences [ <i>Lesingia hololeuca</i> ]		
Wiggins, Ira Loren	1928-57	60
Professor of Biological Sciences, Humboldt State University		
Wolf, Carl Brandt	1928-33	18
Botanist, Santa Ana Botanic Garden [ <i>Juglans hindsii</i> ]		
Crum, Ethyl Katherine	1930-31	30
Botanist		
Bracelin, Mrs. H. P.	1930	30
Botanist		
Keck, David Daniels	1931-33	36
Assistant director, New York Botanical Garden; collaborator with Philip Munz, wrote <i>A California Flora</i> , 1959		
Constance, Lincoln	1931-67	33
Professor of Botany, UC Berkeley / Apiaceae, Hydrophyllaceae		
Schreiber, Beryl Olive	1932-38	46
U.S. Forest Service, Mendocino National Forest		

## Assembling the flora – caution required

- A Book Designer creates the layout.
- The dimensions of the book and number of pages included needs to be determined to calculate production costs.
- All word-files were placed into a new program. This created glitches that required editorial review by myself. Problems that arose included missing pages, missing photos, changes in font size and more.
- An addendum was added to the Flora to add species documented during the 5 year production period.

## Some lessons learned from the final production experience

- Meet with involved parties to communicate expectations.
- Sign a contract that clearly defines what the responsibilities of the book designer, the publishing agent and author.
- Get a written cost estimate for the book design.
- Get a timeline for completion of the product.

## Benefits of Publishing a Comprehensive County Flora -

- Simplifies the effort in identifying a species in a county. Napa County includes about 22% of over 7600 native and naturalized taxa in California.
- A local flora can include more detailed information on habitat, plant distribution, abundance and public parks where interested persons may observe many species.
- Provides a useful reference for local organizations, agencies, researchers.

A Flora of Napa  
County –  
published Nov. 2020

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The Mead Foundation,  
Napa County Wildlife Commission  
Napa Community Foundation  
----and other private parties

This book could not have been completed without the Napa Valley Chapter of CNPS, my wife April and daughter Andrea

