

The Calflora Database

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Our Mission

- Calflora is California's online digital plant library, providing a wide variety of information on the State's wild plants. This data is available in readily usable electronic formats.
- We serve public information needs related to scientific study, land management, environmental analysis, education, and appreciation of California plant life.



information on wild California plants for conservation, education, and appreciation

Calflora funding originally came from US government agencies (e.g. USFS, NPS, BLM), but today comes from subscriptions, donors, grants, service contracts, and foundations.

This diverse funding model has worked well for over a decade.



Calflora database contains:

- >10K native and introduced species
- >800K plant location observations (points, lines, & polygons)
- >30K relationships between old and new plant names (both scientific and common)*
- >300K plant photos
- >36K unique Calflora e-visitors each month (~1,200/day)

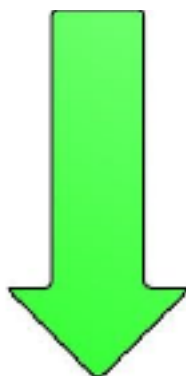


Calflora

information on wild California plants for conservation, education, and appreciation

Data In

- > 500 Professional Botanists
- > 1000 Amateur Botanists
- > 1800 Other Observers
- > > 100 Institutions



Data Out

Researchers
Students
Botanists
Ecologists
Land Managers
Conservationists

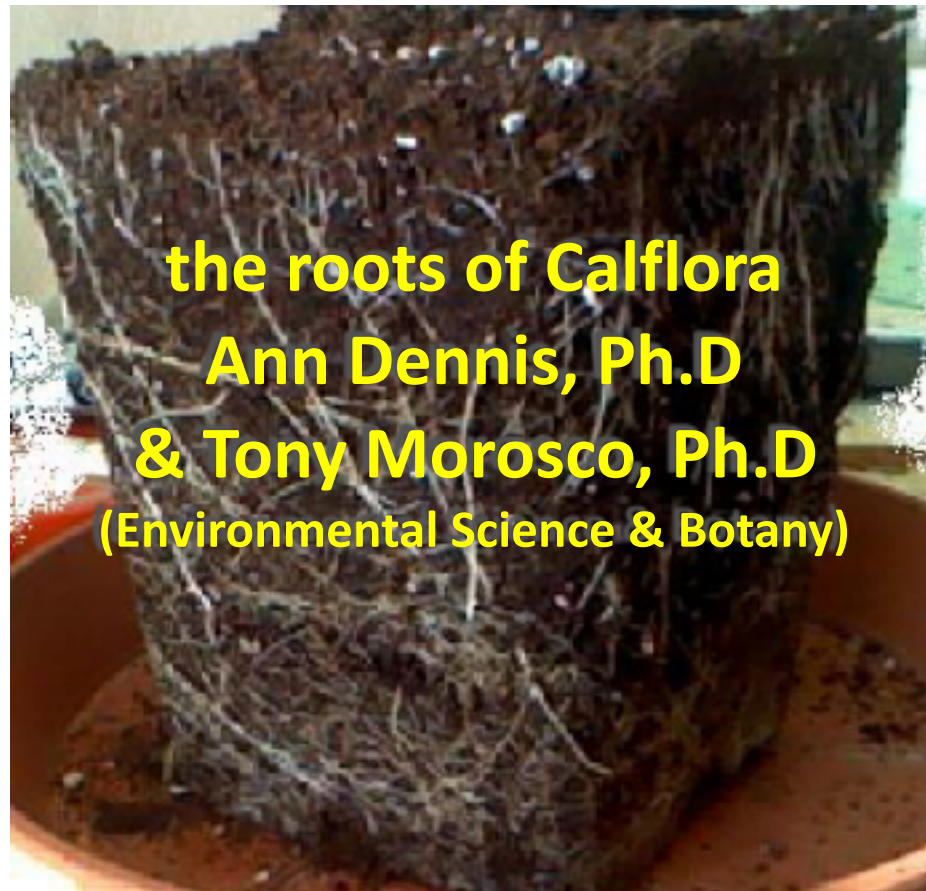


Calflora Database



information on wild California plants for conservation, education, and appreciation

Calflora started as Ann Dennis sharing a text file of CA plants in 1994, Tony Morosco joined 1997. The non-profit was formed in 2001.



the roots of Calflora
Ann Dennis, Ph.D
& Tony Morosco, Ph.D
(Environmental Science & Botany)



Origin of Records for the Observation Database

Startup

- USFS Vegetation Program plant surveys, both recent and historical.
- Association of University of California Herbaria
- State of California plant surveys

Ongoing

- Private collections, observation & esp. photographs
- More herbaria datasets
- More agencies datasets
- Individual observation contributions



Summary of Development History

1994: Use of pure text file (.csv), downloadable

1997-1999: Creation of webUI, entirely in html & PHP scripts

1999- 2000: Integration of CalPhotos photos

1. documenting characteristics of various elements data, GIS reliability (maybe county only), ID reliability, verifiable. records are tagged with quality aspects.
2. integration of various GIS coord systems
3. dictionary lookup for mis-matches, mis-spellings
4. document authorship & methods used for import

2006: Switch to using Google dev toolset and javascript
(some php scripts still at core of certain queries)

Challenges of Data Capture

Early Herbaria records

- more than 100 years old
- some only on paper in 1994
- date ambiguity, e.g. year or month only

In General

- Constantly changing species names

Record-specific issues

- Imprecise geo-coordinates
- Lack of altitude information from many early observations
- Inaccurate identification & classification, some subjectivity

Data Capture Methodology

Key Criteria

- Creation & maintenance of large number of record attributes
- Data Ownership retained by contributors who demand it
- Allowing anyone to input and submit observations

Large Datasets

- our own methods for normalizing & integrated datasets
- scan for irregularities, missing fields etc

Observation Verification


Crowdsourcing

- Self-identified individuals register with level of expertise
- Calflora Staff checks on backgrounds for reviewers, some are botanists, others experienced, talented amateurs
- New observations are identified and queued
- Calflora staff may identify outliers
- Reviewers regularly look at new records and make corrections, if desired.
- Other reviewers may dispute corrections

The Calflora User Interfaces

- Web UI
- Android & iPhone apps

WebUI: Calflora Home Screen



Calflora

Information on wild California plants for conservation, education, and appreciation

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[My Observations](#)
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[What Grows Here?](#)
[Great Places](#)
[Planting Guide](#)
[NRCS eVegGuide](#)
[Weed Manager](#)
[Invasives](#)

Search for Plants

SEARCH

CLEAR

HELP

Common Names [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Scientific Names [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Family Names [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

plant name [NAME WIZARD](#)

Enter part of a name:

common

scientific

or FAMILY

duration

☐ Annual

☐ Perennial

☐ Biennial

status

☐ Native to California

☐ Not native to California

☐ Cal-IPC invasive plants

community

any

Alkali Sink

Alpine Felt-fields

Bristle-cone Pine Forest

Chaparral

Closed-cone Pine Forest

lifeform

☐ Grasslike

☐ Tree

☐ Herb

☐ Fern

☐ Shrub

☐ Vine

category

☐ Monocot

☐ Dicot

☐ Gymnosperm

☐ Pteridophyte

☐ Bryophyte

☐ Lichen

☐ Algae

☐ Whisk-Iern

result format

Photos

more ...

Order by

scientific name

county

any

Alameda

Alpine

Amador

Butte

Calaveras

Colusa

Contra Costa

Del Norte

El Dorado

Fresno

Glenn

Humboldt

Imperial

Inyo

Kern

Kings

Lake

Lassen

Los Angeles

Madera

Marin

Mariposa

Mendocino

Mercado

Modoc

Mono

Monterey

Napa

Nevada

Orange

Placer

poppy

Papaver

POACEAE

WebUI: Calflora Add Observations Screen



information on wild California plants for conservation, education, and appreciation

QUICK LINKS:

• **Plant Observation Entry**

One plant observed at one location with photos. ([POE HELP](#))

• **Photo Upload**

Make observation records from your photos.

• **Add a Survey or Checklist**

Many plants observed at one location.

• **Phone Applications**

About Contributing Plant Observations — Frequently Asked Questions


Registration and Profiles

- [Can I contribute observations?](#)
- [How do I register as a contributor?](#)
- [How do I change my personal profile?](#)
- [I want other Calflora contributors to be able to contact me -- what do I do?](#)

Contributing Observations

- [How do I add a plant observation?](#) ([POE HELP](#))
- [Can I see other observations of the same plant in the general area of my observation?](#)
- [How do I add a checklist of observations?](#)
- [How do I add a Great Place to view California native plants?](#)
- [How do I indicate whether or not there is public access to the location?](#)
- [Can I add photographs \(photo vouchers\) to my observation?](#)
- [I made a mistake entering an observation, how do I correct it?](#)
- [Why can't the system find my species name?](#)

WebUI: Calflora Add a Record Screen

 Calflora Plant Observation Entry

TOOLS ▶

Bob Marsh

EDIT - LOGOUT

Adding a new record

Organization
Independent

Project
Simple data collection

Access by others
published

History ▶ none

CANCEL

SAVE

Shape ▶ none

Point Location ▶ none

SIMPLE DATA COLLECTION

Scientific Name *

Common Name

Observer *

Bob Marsh

Observation Date *

2017-3-18

Notes

Location Description

Number of Plants
choose

Photos: none
Add a photo ▶

Management Status
none

Natural Status
wild

Region

Collection / Survey

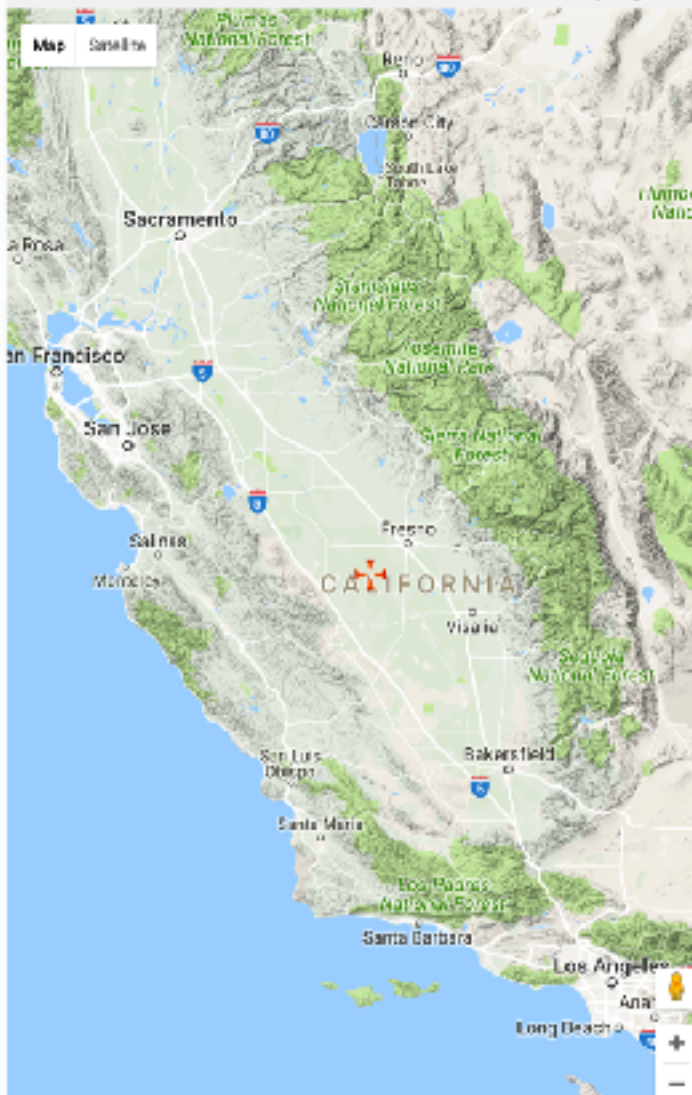
Ownership
Other / Unknown

Plant Identification
choose

Elevation
lookup elevation

Location Accuracy
error radius (meters)

Map Layers ▶



Map Satellite

Map data ©2017 Google, INEGI 60 km Terms of Use Report a map error

38.58250, -120.06250



Calflora

Observation Hotline

Scientific Name

Common Name

Plant Status

Plant List

Observer

Group

Date After

Date Before

Source

☐ in map area

[DRAW A POLYGON](#)

County

OTHER SOURCES

☒ Consortium of CA Herbaria

☐ iNaturalist

☐ records with photos

Order by

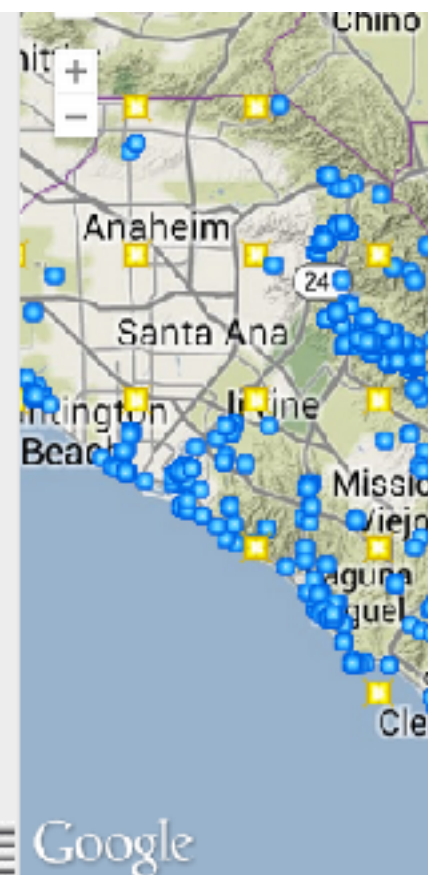
(Observation Date)

SEARCH

Click on **ID** to select a record.

Showing the first 1500 records.

Google



| ID | Plant | Photo | Observer | Source |
|--------|---|-------|----------------|--------|
| oe6274 | <i>Opuntia onicola</i> Chaparral pricklypear | | Ron Vanderhoff | |



▼ Map Layers

☒ County lines

BACKGROUND:

- none
- Watershed
- Protected Area (CPAD)
- Ecoregion
- Jepson Bioregion
- CNPS Chapter
- Zip Code
- Nitrogen Deposition
- MLRA
- 4ETa Zone

CLIMATE:

- Annual Precipitation
- Wet Season
- Winter Low Temp
- Summer High Temp
- USDA Hardiness Zone

SOIL:

- Depth
- pH
- CaCO₃
- Available Water Capacity
- Salinity
- Texture



County Location



Calflora

What Grows Here?

▼ RESULTS

Format

simple

Order by

Scientific Name

Group by



▼ PLANT FILTER

Scientific Name

Family

Plant List

none

Status

invasive (Cal IPC)

Lifeform

any

Category

any

Bloom month

any

Associated with

4 PLANTS

Agrostis stolonifera

Redtop

1 record

Perennial herb

invasive
non-native

POACEAE

Bromus tectorum

Downy chess

3 records
(3 CCH)

Annual herb

invasive
non-native

POACEAE

Cirsium vulgare

Bullthistle

2 records
(2 CCH)

Perennial herb

invasive
non-native

ASTERACEAE

Polypogon monspeliensis *Annual beard grass*

2 records
(2 CCH)

Annual herb

invasive
non-native

POACEAE

Quercus berberidifolia

Inland scrub oak

145 records

(58 CCH)

Salvia mellifera

Black sage

139 records

(70 CCH)

Artemisia californica

Coastal sage brush

129 records

(63 CCH)

Adenostoma fasciculatum

Chamise

129 records

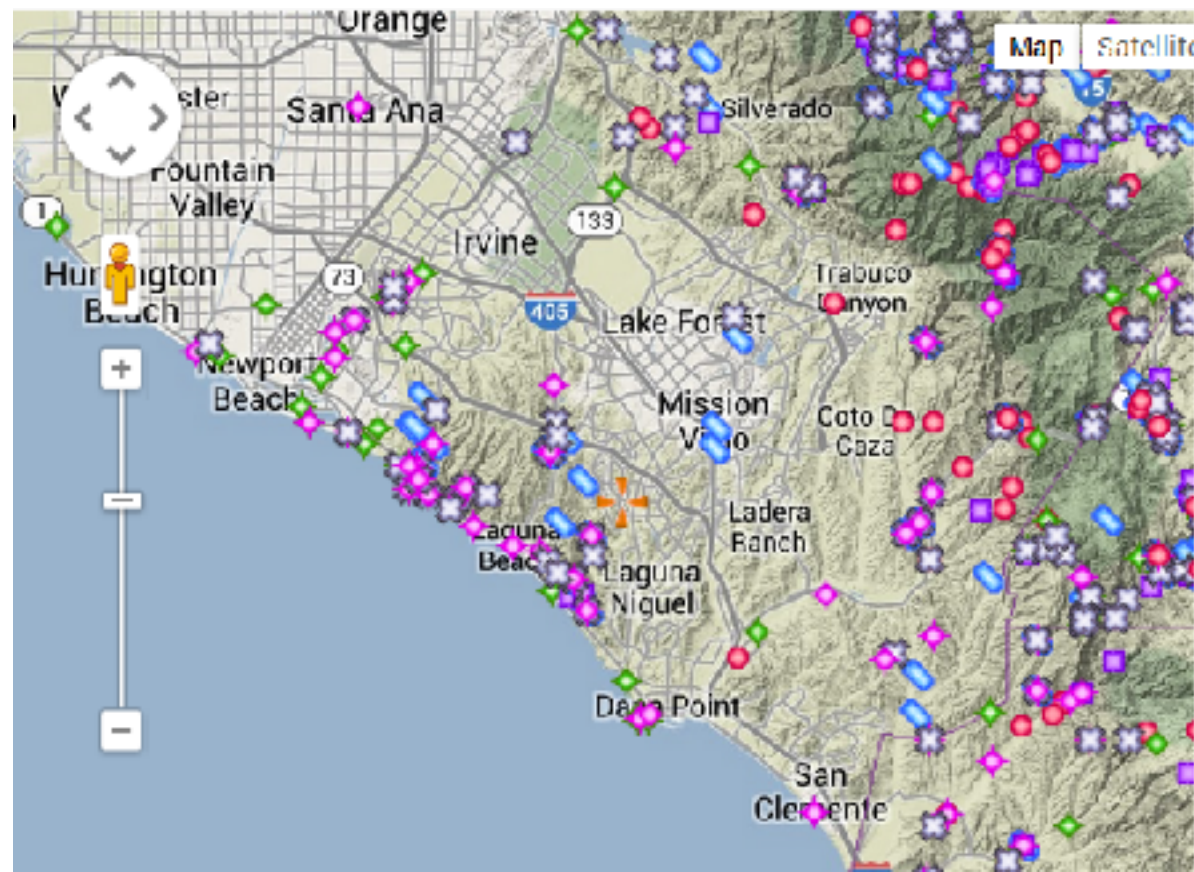
(27 CCH)

Keckiella cordifolia

Heart leaved keckiella

100 records

(65 CCH)



Search

GO



Montara Regional Park
Grassland, Wildflowers, Estuary

Lorem ipsum dolor sit amet,
consectetur adipisicing elit,
sed do eiusmod tempor
incididunt ut labore et



[SEE DETAILS](#)

Legend:

- | | | | |
|----------------|--|----------------------------|--|
| Grassland | | Estuary | |
| Coastal Strand | | Tidal Marsh | |
| Wildflowers | | Chaparral | |
| Redwood Forest | | Mitigation Success Stories | |
| | | Multiple Ecosystems | |

CLEAR ALL

GREAT DESTINATIONS:
Native Plants in Your Community

Explore maps of great places to see
native plants in your area or where
you're planning your next vacation.

EXPLORE

UPCOMING EVENTS



Wildflower Blooms
See our interactive map
showing the best times and
places to see wildflower
blooms across California
[Learn More](#)



Marin Grassland Tours
Saturdays 3/6 to 3/24
Join the naturalist John
Thommason on a tour of
some of the Bay Area's best
places to experience native
grasslands.
[Learn More](#)

VIEW ALL EVENTS

VOLUNTEERING:
Location Data Collection

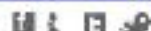
Lorem ipsum dolor sit amet, consectetur

[LOG IN](#)

[LEARN MORE](#)

Richmond hills – Mira Vista Park

Native Grassland - Northern CA - San Francisco East Bay

[Return to Great Place Home](#)

ABOUT

The Mira vista field is a 8 acre field of mostly open upland with over 25 native grassland species. It is the old day care above Richmond it adorns and is part of the Mira Vista elementary school and surrounded by 1800's homes. The property is owned by the West Contra Costa Unified School District (WCUSD), and is maintained by volunteers of the Mira Vista Neighborhood Association (MVNA) working in cooperation with the School District's maintenance department. Dogs are walked here, but only under leash during day school hours.

[See Events being held at Mira Vista Park](#)

LOCATIONS IN MIRA VISTA HILLS

[Mira vista Field - Native Grasses](#)

[Mira vista - Wet Areas - Native Grasses - Fieldwork](#)

GRASSLANDS

3 species of native meadowgrass:



Wetland Grass
Tridax arachnoides
(Photo credit: Jane Doe)



Wild Rice
Oryza glaberrima
(Photo credit: Jane Doe)



Common Oatgrass
Avena sativa
(Photo credit: Jane Doe)



Purple Woodland
Salix purpurea
(Photo credit: Jane Doe)

[See all 3 native grasses](#)

WILDFLOWERS

17 species of native flowers and bulbs including:



King's Garden
Phlox subulata
(Photo credit: Jane Doe)



Chrysopsis
Chrysopsis
(Photo credit: Jane Doe)



Common Hops
Humulus lupulus
(Photo credit: Jane Doe)



Blue Lilies
Lilium
(Photo credit: Jane Doe)

[See all 17 native wildflowers](#)



Directions from Google Maps

[Google Earth Day Chapter](#)

Hours of Operation:
Closed to Sunday

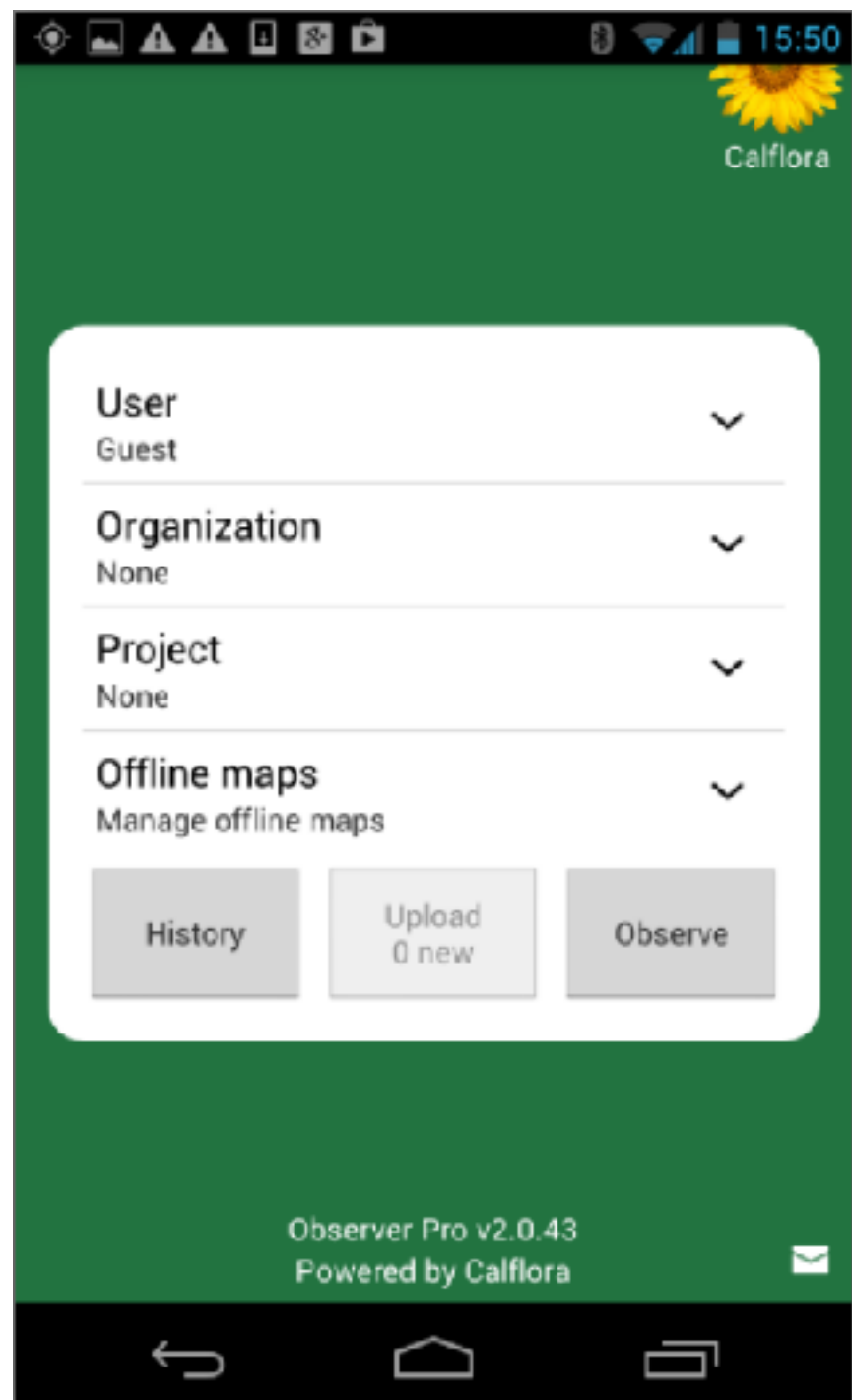
Contact Information:
John Doe
(415) 234-1234
john@jane.com



information on wild California plants for conservation, education, and appreciation

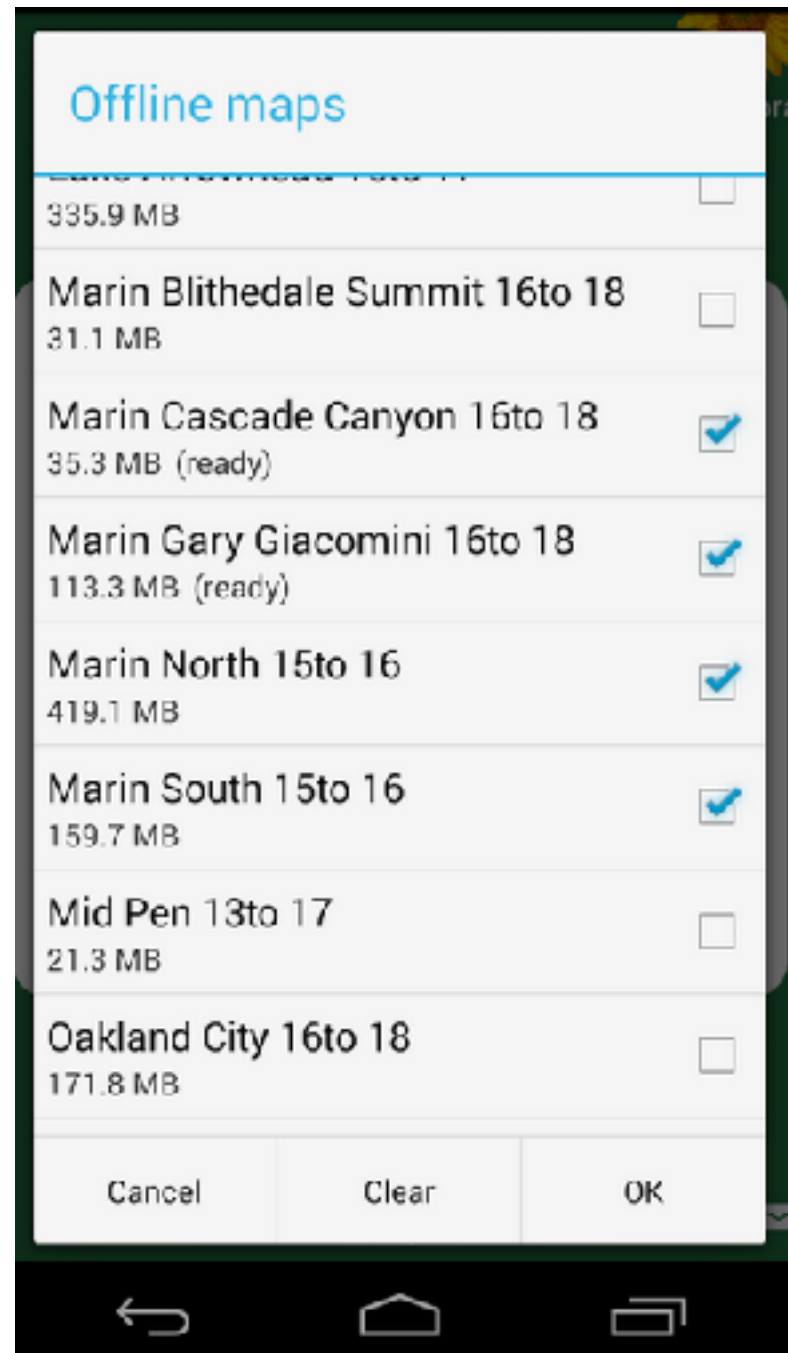
Using Calflora's *ObserverPro* Android App to enter plant observations

Home Screen



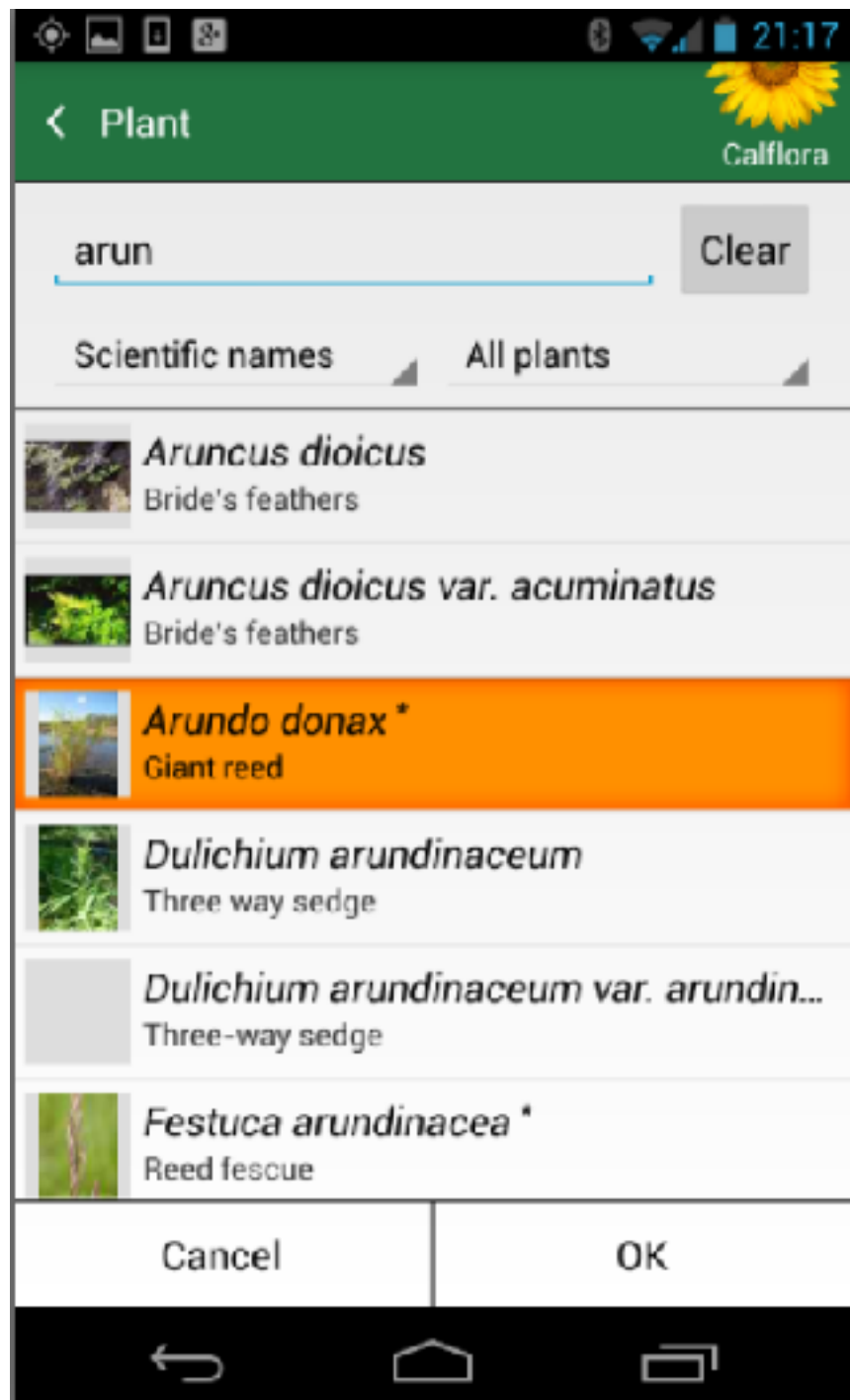
Maps List Offline Operation

- do not need data plan or wifi in the field.
- do need Internet access to upload observations at a later time.



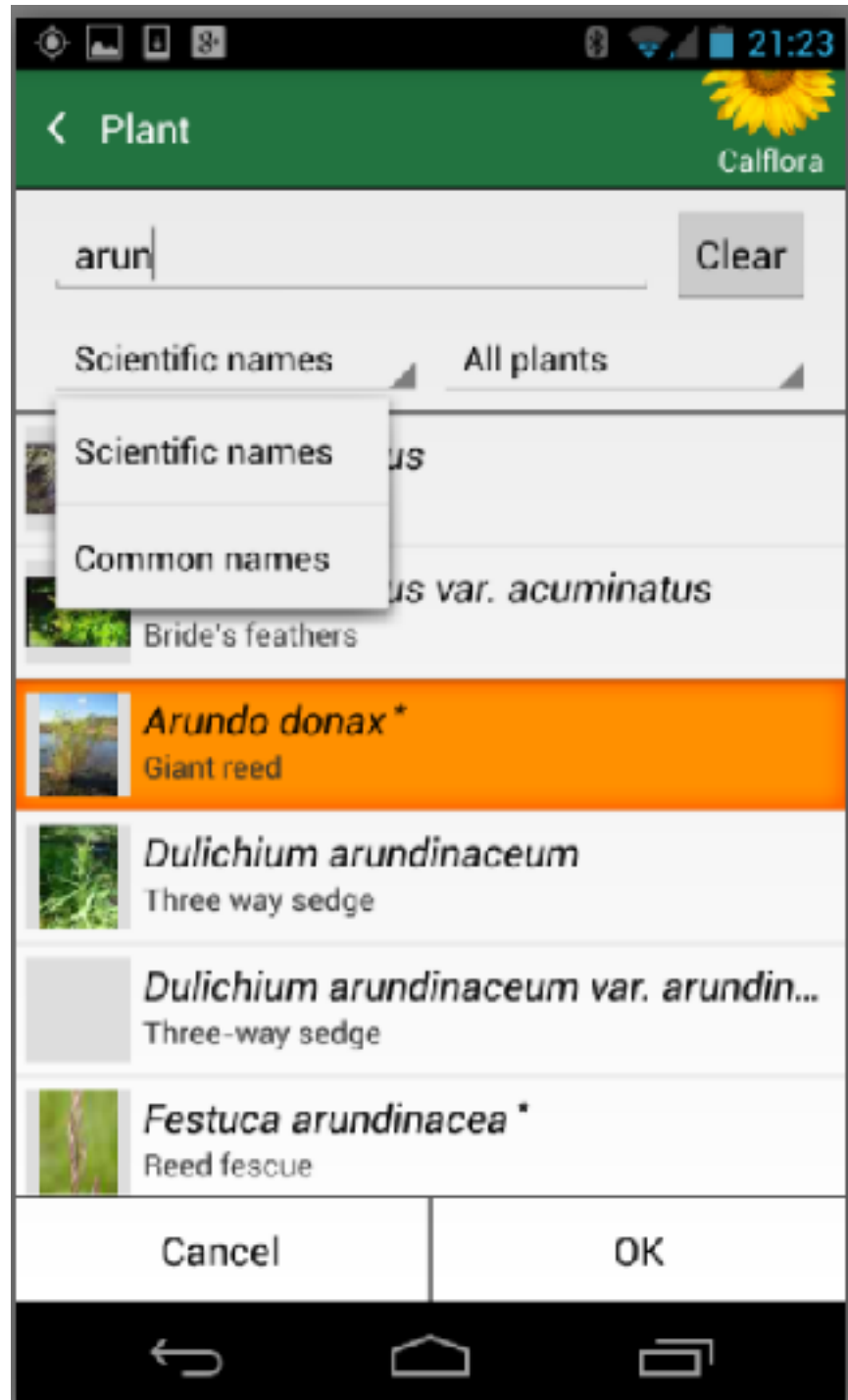
Observations

species entry



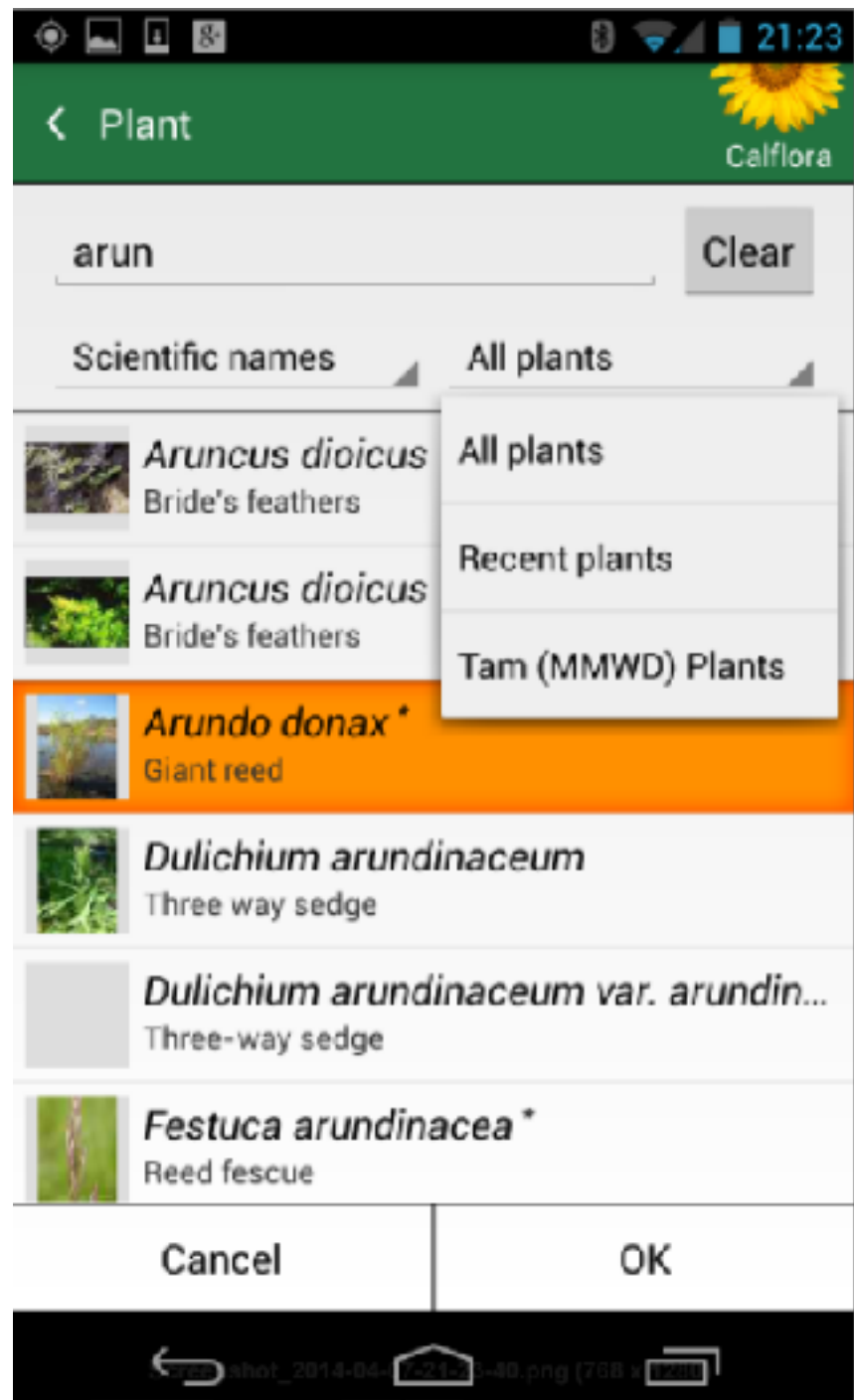
Observations

species entry 2



Observations

species entry 3



Observations

coordinates,
map view

The screenshot shows a mobile application interface for recording observations. At the top, a green header bar contains a back arrow, the title "Observation", and a sunflower icon with the text "Calflora". The main content area is titled "LOCATION" and features a map view with a red location pin. Below the map, there are three input sections: "Buffer (meters)" with a dropdown arrow, "Management Area" with a dropdown arrow, and "Location Description" with a text input field. At the bottom, there are "Cancel" and "Save" buttons. The status bar at the very top shows the time as 21:57 and various system icons.

Observation

Calflora

LOCATION

Map

37:50:6.77292, -122:15:27.26172

50th St

49th St

Shafter Ave

Lowton Ave

Google

Buffer (meters)

Touch to set buffer

Management Area

Touch to select

Location Description

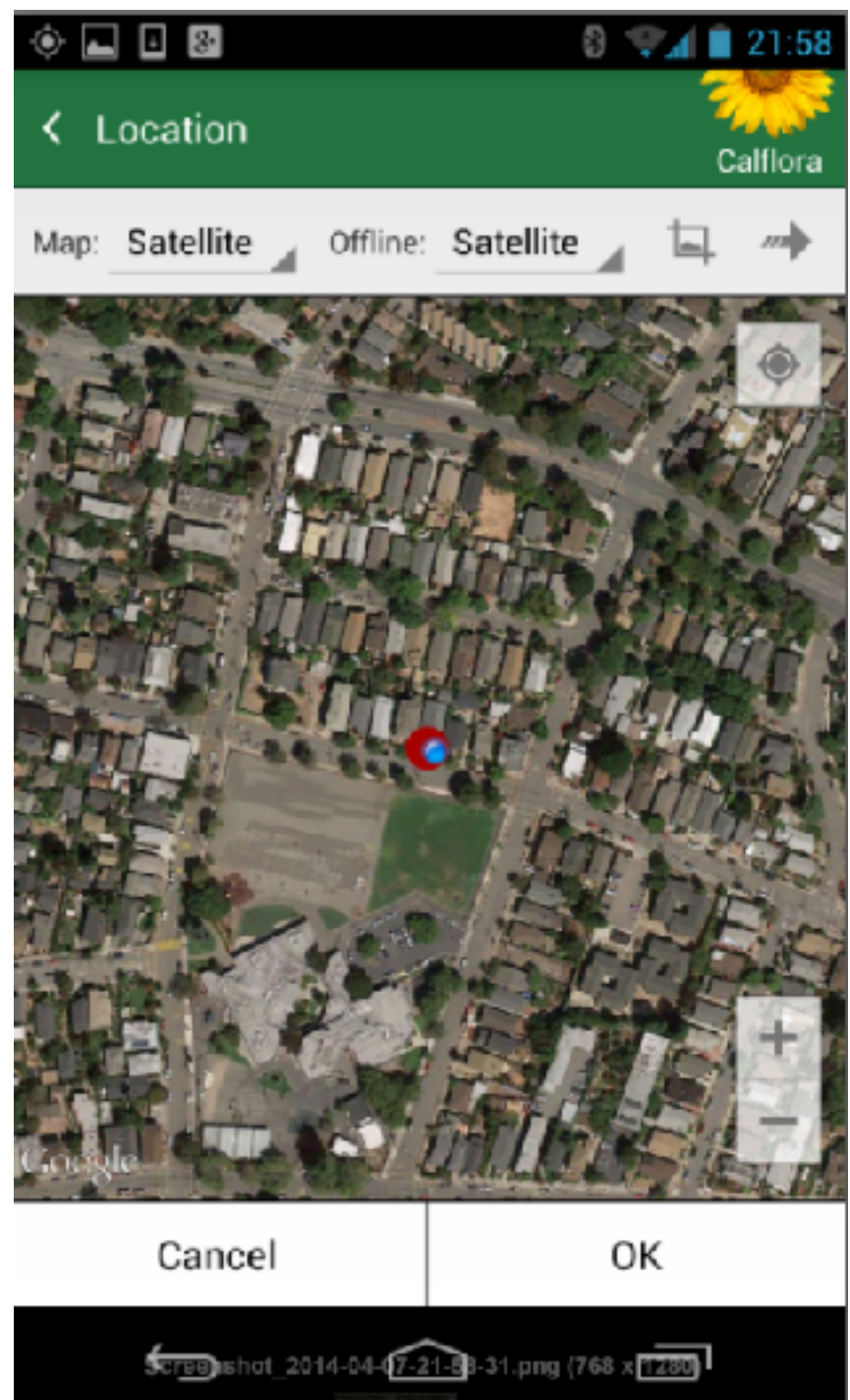
Touch to add text

Cancel

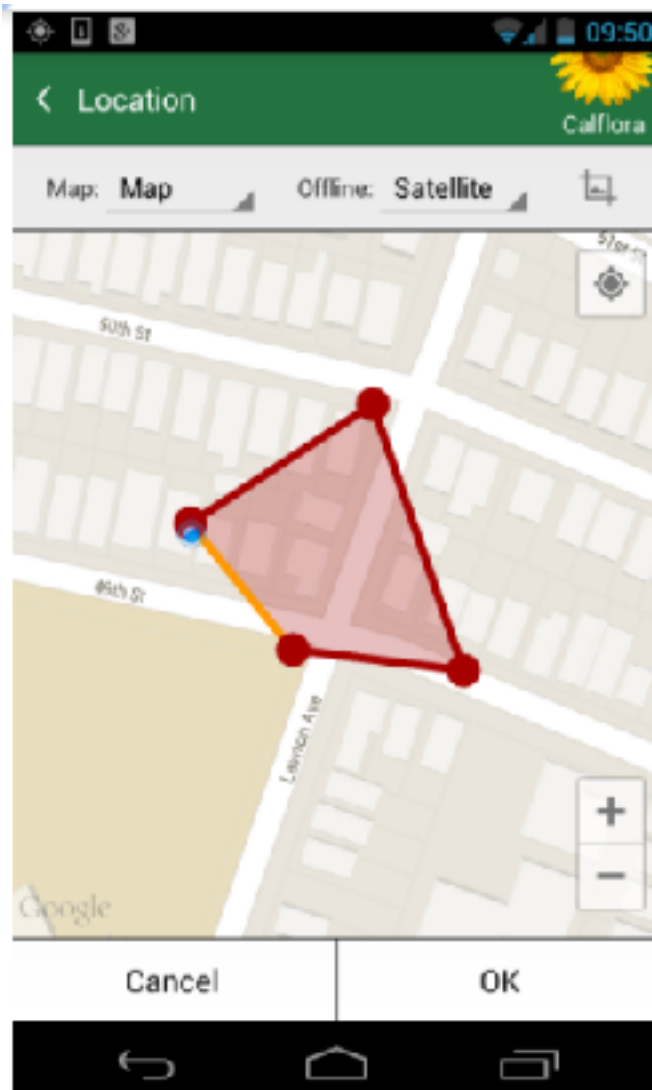
Save

Observations

coordinates,
satellite view




Drawing polygons




Observations


Advanced mode entry


The screenshot shows a mobile application interface for recording observations. At the top, a green header bar contains a back arrow, the title 'Observation', a sunflower icon, and the location 'California'. The status bar at the very top shows the time as 21:55 and various system icons. The main content area is divided into two sections: 'ASSESSMENT' and 'TREATMENT', each with a green header. The 'ASSESSMENT' section contains five dropdown menus: 'Status', 'Number of Plants', 'Percent Cover', 'Distribution', and 'Phenology'. Each dropdown has the text 'Touch to select' below it. The 'TREATMENT' section contains two dropdown menus: 'Treatment Method' and 'Herbicide', also with 'Touch to select' text below them. At the bottom of the form are two buttons: 'Cancel' and 'Save'. The entire application is set against a dark background.


Observation  California


ASSESSMENT

Status 
Touch to select


Number of Plants 
Touch to select


Percent Cover 
Touch to select

Distribution 
Touch to select

Phenology 
Touch to select

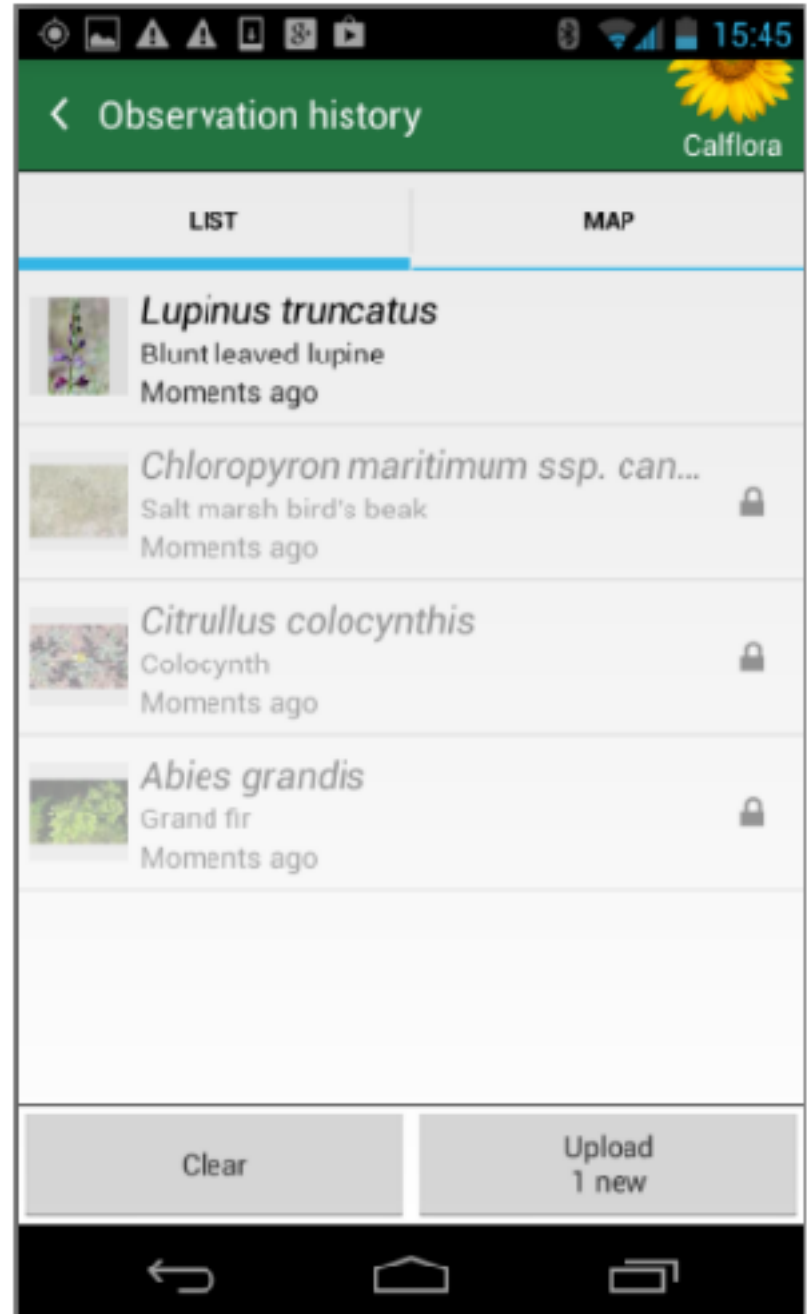
TREATMENT

Treatment Method 
Touch to select

Herbicide 
Touch to select

Cancel Save

If you have uploaded some observations already, they are dimmed in the list and locked to show that you can no longer edit them on the phone.



Let's have a brief workshop

1. Open browser, goto www.calflora.org
2. Register with your name and email address
3. Be sure to click "*Register as a Contributor*"

Calflora Workshop

1. Goto Google Play or Apple iTunes.
2. Download & install “*Observer Pro*” app.
3. Run app.



Thank you everyone for your attention!

Questions & comments please.