



Calflora

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

# Mapping and Tracking (Invasive) Plants with Calflora's Weed Manager

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MARIN COUNTY  
PARKS  
PRESERVATION · RECREATION



MARIN MUNICIPAL  
WATER DISTRICT



YOSEMITE  
CONSERVANCY

Calflora is an equal opportunity provider and employer.



Calflora

Thank you to our Weed Manager Development Funders!





## Agenda

Introduction and Calflora basics 1-1:30

Overview of Weed Manager (WM) 1:30-2:15

Learning about Observer Pro 2:15-3pm

Using Observer Pro outside 3-3:45

Upload and edit field data 3:45-4:45

How organizations are using WM

Final questions, eval forms 4:45-5

Anything else we should add to agenda?



## Our Nonprofit's Mission

- Calflora is California's digital plant library
- We provide information on wild CA plants for conservation, education, and appreciation
- We serve public information needs related to scientific study, land management, environmental analysis, education, and appreciation of CA plant life



## Calflora database contains

- > 12,000 native and introduced species
- > 3 million plant location observations (points, lines, and polygons)
- > 30,000 relationships between old and new plant names
- > 300,000 plant photos
- > 55,000 unique Calflora e-visitors each month (varies seasonally)
- > 1,000 active data contributors (you?)



**1994:** PhD botanist Ann Dennis shared a text file of CA plants.

**1997:** Local botanist Tony Morosco joined Ann's efforts to document local plants.

**2001:** They created Calflora 501(c)3 not-for-profit.

the roots of Calflora



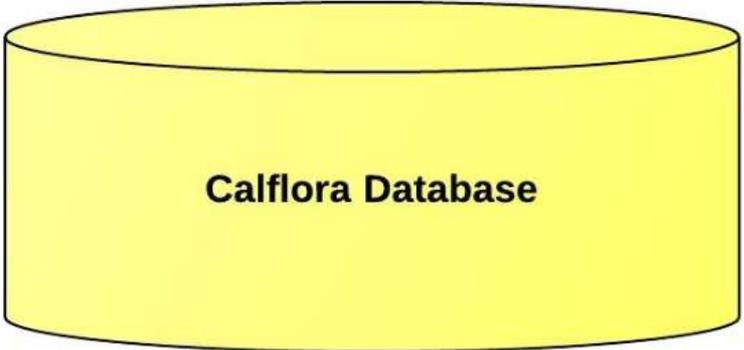
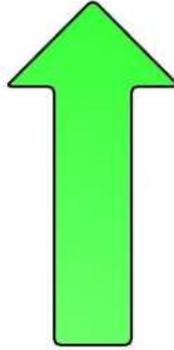
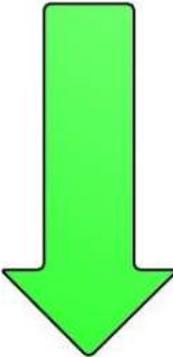


## Data In

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

## Data Out

- Researchers
- Students
- Botanists
- Ecologists
- Land Managers
- Conservationists



**Calflora Database**



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# Weed Manager: Acquiring data



Observer Pro  
android phone app

ID	Shape	Collector	Name	Date	Species Co	Scientific
1	Polypogon	volunteer	Frank Kallies	8/10/2012	Adirondack Forest	Cynanchum latifolium
2	Polypogon	volunteer	Karl Kallies	8/10/2012	Tree Tobacco	Hibiscus glabra
3	Polypogon	volunteer	Karl Kallies	8/10/2012	Castor Bean	Rhus copallina
4	Polypogon	volunteer	Karl Kallies	8/10/2012	Adirondack Forest	Cynanchum latifolium
5	Polypogon	volunteer	Frank Kallies	8/10/2012	Adirondack Forest	Cynanchum latifolium
6	Polypogon	volunteer	Stephen Chung	8/30/12	Tanacetum	Tanacetum tanacetifolium
7	Polypogon	volunteer	Stephen Chung	8/30/12	Tanacetum	Tanacetum tanacetifolium
8	Polypogon	volunteer	Stephen Chung	8/30/12	Castor Bean	Rhus copallina

Upload shapefiles / geodatabases



iOS phone app

Calflora Plant Observation Entry

Organization: [blank] Project: unavailable

Access by others: [blank] History: none

Shape: none Point Location: none

Photos: none

Management Status: [blank] Natural Status: [blank]

Region: [blank] Collection / Survey: [blank]

Map Satellite

San Francisco

San Jose

Sal

Monterey

NEW RECORD

Online



Geotagged Photos

I need a  
point  
with a  
radius.



My  
agency  
requires  
polygons.



Percent  
cover and  
plant count  
are key.



# Various form options: you choose assessment fields

## Org A

### ASSESSMENT

Number of Plants

1

Percent Cover

Touch to select

Distribution

Touch to select

Phenology

Touch to select

Gross Area (acres)

Touch to set area

Infested Area (acres)

Touch to set area

## Org B

### ASSESSMENT

Number of Plants

Touch to select

Phenology

Touch to select

Distribution

Touch to select

## Org C

### ASSESSMENT

Status

Touch to select \*

Number of Plants

Touch to select

Percent Cover

Touch to select \*

Distribution

Touch to select \*

Phenology

Touch to select \*

# You Choose Treatment Fields

Org A

TREATMENT	
<b>Treatment?</b> Chemical	▼
<b>Mechanical Method</b> Touch to select	▼
<b>Chemical Method</b> Touch to select	▼
<b>Herbicide</b> Touch to select	▼
<b>Ounces of Chemical</b> Touch to set value	
<b>Ounces of Water</b> Touch to set value	
<b>Concentration (%)</b> Touch to set value	
<b>Treated Surface Area, square feet</b> Touch to set value	
<b>Percent Treated</b> 100	

Org B

TREATMENT	
<b>Treatment Method</b> Touch to select *	▼
<b>Herbicide</b> Touch to select	▼
<b>Concentration (%)</b> Touch to set value	
<b>Percent Treated</b> Touch to select	▼
<b>Ounces of Chemical</b> Touch to set value	
<b>Ounces of Water</b> Touch to set value	
<b>Concentration (%)</b> Touch to set value	
<b>Treated Surface Area, square feet</b> Touch to set value	
<b>Percent Treated</b> 100	
<b>Number of Plants Treated</b> Touch to set value	
<b>Number of Bags Removed</b> Touch to set value	
<b>Labor Hours</b> Touch to set value	

# Various form options: you choose whether/which labor fields

Org A

**LABOR**

**Crew 1** ▼  
Touch to select

---

Total Labor Hours Crew 1  
Touch to set hours

---

**Crew 2** ▼  
Touch to select

---

Total Labor Hours Crew 2  
Touch to set hours

---

**Crew 3** ▼  
Touch to select

---

Total Labor Hours Crew 3  
Touch to set hours

---

**Number of Volunteers**  
Touch to set number

Org B

Amount of Chemical  
Touch to set value

---

Amount of Chemical Units ▼  
Touch to select

---

Amount of Water  
Touch to set value

---

Amount of Water Units ▼  
Touch to select

---

Concentration  
Touch to set value

---

Concentration Units ▼  
Touch to select

---

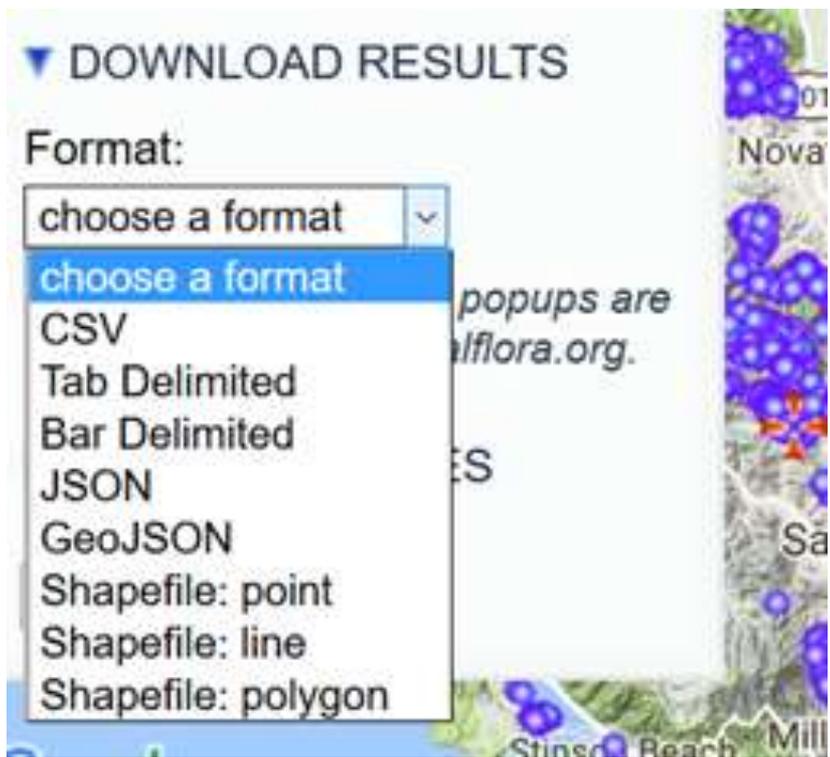
**Staff Labor Hours**  
Touch to set area

---

**Volunteer Labor Hours**  
Touch to set area



# Weed Manager: Managing data



Data export



# Weed Manager: Managing data



History stacks



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

# Weed Manager: Managing data

Calflora Group Observations

MAP LAYERS TOOLS

38.0127, -122.5716

Scientific Name

Common Name

Plant Status

Plant List

Access by others

Region

Start Date eg. 2016-12-31

End Date

Only Shape Records

Treatment

History Filter

anywhere

in map area

POLYGON

Group  view

Projects More Criteria

Map Satellite

Google Map data ©2016

Group Observations



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## Weed Manager

- Groups
- Shapes
- Project setup
- Organization options
- Work session entry
- Reports
- Survey entry
- Hour and herbicide distributor



## Weed Manager: Groups

A group is a set of people using Calflora with interests in common. In WM, the interests in common concern data collection and management-- actively contributing plant observations and monitoring observations contributed by others.

Any features which members of the group define -- observations, searches, plant lists -- can be shared within the group, and are easily discoverable by all members of the group.

Groups can also share unpublished observations with each other. A Calflora group may have one or more “data czar(s)” who can edit / publish / delete any observations in that group.



## Weed Manager: Shapes

As a Calflora data contributor, you have your own portfolio of lines and polygons. Each time you enter an observation record with a line or polygon, the line or polygon goes into this portfolio. Each time you make a search polygon from Observation Hotline or What Grows Here, and save it by name, it goes into this portfolio.

With the Shape Editor application, you can view and edit any of the lines and polygons you may have added. You can also enter a new line or polygon. You can also upload a polygon shapefile, so that the polygons in the file become available for search in Observation Hotline and What Grows Here.

If you are a member of a group, then any lines or polygons owned by the group will also be available to you through this application. You can also share your polygons with a group.



## Weed Manager: Project Setup

A project is a way of organizing data collection and treatment records; within the Weed Manager system, the assumption is that every record will be associated with a project. Further, work session information within Weed Manager is accumulated on a project basis.

Many of the fields in a project record are designed for the convenience of using the Observer Pro phone application. In Observer Pro, all data for each of your organization's projects is loaded onto the phone each time you press REFRESH, including the plant list, center point, and historical records. When using Observer Pro, you can easily switch between projects.



# Weed Manager: Organization Options

CREW	ROLES	ACTIVITIES	BILLING CODES	CHEMICALS	SEARCHES
------	-------	------------	---------------	-----------	----------

10 Records      Click on  to view a record.

	Role	Billing Method	Hourly Rate
	Youth Crew	hourly	21.55
	Seasonal Staff	hourly	42.59
	Regular Staff	hourly	100.00
	Contractor	fixed price	0.00
	Contractor Hourly	hourly	50.00
	Volunteer	hourly	35.00
	One Tam Staff	hourly	0.00
	One Tam Intern	hourly	0.00
	CCNB Sup	hourly	59.75
	CCNB Crew	hourly	30.75



# Weed Manager: Organization Options

CREW	ROLES	ACTIVITIES	BILLING CODES	CHEMICALS	SEARCHES
15 Records      Click on <a href="#">🔍</a> to view a record.					
Type	Product	Company	Active Ingredient	Registration	Formulation
<a href="#">🔍</a> Dye	Hi-Light				
<a href="#">🔍</a> Dye	Turf Mark				
<a href="#">🔍</a> Surfactant	Pentra-bark			CA 83416-50001	
<a href="#">🔍</a> Surfactant	Competitor			CA 2935-50173	
<a href="#">🔍</a> Surfactant	Liberate			CA 34704-50030	
<a href="#">🔍</a> Herbicide	Garlon 4 Ultra	Dow AgroSciences	triclopyr	EPA 62719-527	
<a href="#">🔍</a> Herbicide	Aquamaster	Monsanto	glyphosate	EPA 524-343	liquid
<a href="#">🔍</a> Herbicide	Poast	CDMS	sethoxydim		
<a href="#">🔍</a> Herbicide	Habitat	BASF Specialty Herbicides	imazapyr	EPA 241-426	
<a href="#">🔍</a> Herbicide	Roundup Pro	Monsanto	glyphosate	EPA 524-475	liquid
<a href="#">🔍</a> Herbicide	Roundup	Monsanto	glyphosate		
<a href="#">🔍</a> Herbicide	Fusilade II	Syngenta Professional Products	flauziflop-p-butyl	EPA 100-1084	
<a href="#">🔍</a> Herbicide	Garlon 3A	Dow AgroSciences	triclopyr	EPA 62719-37	



## Weed Manager: Work Session Entry

With the Work Session Entry application you can view, enter, or edit work session records for an organization. It can be used as an electronic timesheet, to track how much work was done, by whom, on which projects.

Note that a crew record can describe a single person (e.g. a member of the organization's staff), a contractor, or a volunteer group.

# Weed Manager: Reports



## VEGETATION AND BIODIVERSITY PROJECTS: MONTHLY IPM TREATMENT REPORT FORM

Marin County Open Space District

March 2016

### CHEMICAL TREATMENTS

Date(s)	Preserve	Labor Source	Product Applied	EPA/Cal-EPA Registration Number	Undiluted Product Used	Target Pest	Hours
3/16	Terra Linda	Contractor	Fusilade II	100-1084	96 oz	Aegilops triuncialis	33
" "	" "	" "	Competitor	2935-50173	192 oz	" "	" "

### OTHER MANAGEMENT ACTIVITIES

Date(s)	Preserve	Labor Source	Activity	Target Pest	Hours
3/3	Indian Valley	Staff	Hand pulling	Genista monspessulana	7.5
3/3	Roy's Redwoods	Staff	Hand pulling	Phalaris aquatica	4.0
3/3	Roy's Redwoods	Staff	Hand pulling	Genista monspessulana	2.0
3/3	French Ranch	Staff	Hand pulling	Arundo donax	0.5
3/4	Kent Island	Staff	Hand pulling	Cakile maritima	4.5
3/4	Kent Island	Staff	Hand pulling	Ammophila arenaria	9.0
3/7-3/8	Indian Valley	Staff	Hand pulling	Genista monspessulana	22.5
3/8	Indian Valley	Staff	Hand pulling	Cytisus scoparius	0.5
3/8-3/9	Lucas Valley	Staff	Shovel shear	Pyrocantha angustifolia	2.5
3/9-3/10	Ring Mountain	Staff	Hand pull	Cortaderia jubata	11.5
3/9	Lucas Valley	Staff	Hand pull	Grevillea robusta	1.0



## Weed Manager: Survey Entry

A survey is a search for certain plants in a discrete area at a certain time. To enter a survey record, you will need to specify the area, the date, and a plant list. For each plant in the plant list, you can indicate whether or not you found it. If you did find it, you may indicate how abundant it was (1+, 1-10, 11-100, etc.).

You may also indicate plant count zero for “not found,”  
→ absence data for that surveyed area.



## Weed Manager: Hour and Herbicide Distributor (HHD)

This application allows a user to apply a number of work hours and amount of herbicide to all treatment records for a chosen organization, project, and day. The user sees a list of matching treatment records, each with a value for gross area and percent cover.

HHD divides the total hours in proportion to the infested area of each record and shows this to the user in a preview table. The user can then adjust the number of hours allocated to each treatment record.



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Weed Manager: **acquiring data**, managing data, and  
using **Observer Pro** phone application

My apps

Shop

Games

Editors' Choice



# Calflora Observer Pro

John Malpas - June 9, 2014

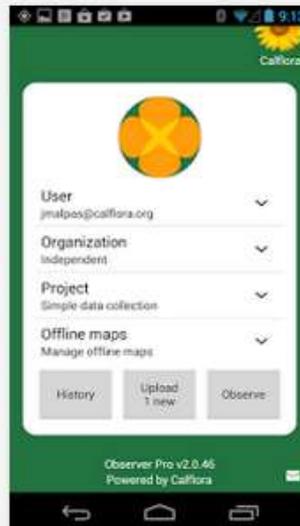
Education

Installed

This app is compatible with all of your devices.

★★★★☆ (11)

8+1 +9 Recommend this on Google





**User** ▼  
Guest

---

**Organization** ▼  
None

---

**Project** ▼  
None

---

**Offline maps** ▼  
Manage offline maps

History      Upload 0 new      Observe



## Offline maps

ALA Tilden Lone Oak 13to 19

13.6 MB



ALA UCB 15to 19

12.5 MB



ALA huckleberry 11to 19

11.5 MB



ALA tildensteamers 12to 20

36.5 MB



ALP Blue Lakes 15to 16

12.5 MB



ALP Lake Kirkwood 14to 19

63.9 MB (ready)



ALP West Central Alpine Co 11to 14

80.4 MB



CCA John Muir 15to 20

40.0 MB



LAK Knoxville 15to 17

207.9 MB



LAK Knoxville S Sofres 18to 21



CLEAR

CANCEL

OK

arun Clear

Scientific names All plants

 *Aruncus dioicus*  
Bride's feathers

 *Aruncus dioicus var. acuminatus*  
Bride's feathers

 *Arundo donax* \*  
Giant reed

 *Dulichium arundinaceum*  
Three way sedge

 *Dulichium arundinaceum var. arundin...*  
Three-way sedge

 *Festuca arundinacea* \*  
Reed fescue

Cancel

OK

arun Clear

Scientific names All plants

- Scientific names
- Common names
- Bride's feathers

 **Arundo donax \***  
Giant reed

 **Dulichium arundinaceum**  
Three way sedge

**Dulichium arundinaceum var. arundin...**  
Three-way sedge

 **Festuca arundinacea \***  
Reed fescue

Cancel OK

arun Clear

Scientific names All plants

-  **Aruncus dioicus**  
Bride's feathers
-  **Aruncus dioicus**  
Bride's feathers
-  **Arundo donax \***  
Giant reed
-  **Dulichium arundinaceum**  
Three way sedge
-  **Dulichium arundinaceum var. arundin...**  
Three-way sedge
-  **Festuca arundinacea \***  
Reed fescue

- All plants
- Recent plants
- Tam (MMWD) Plants

Cancel OK

**LOCATION**

**Map**

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



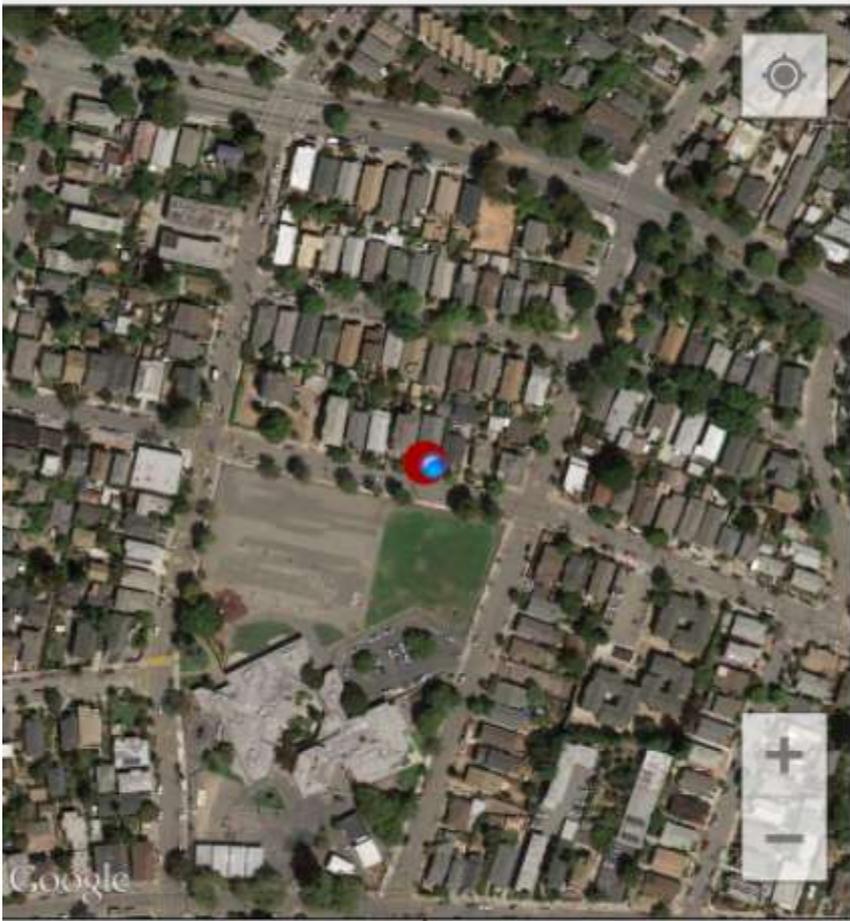
**Buffer (meters)**    
 Touch to set buffer

**Management Area**    
 Touch to select

**Location Description**   
 Touch to add text

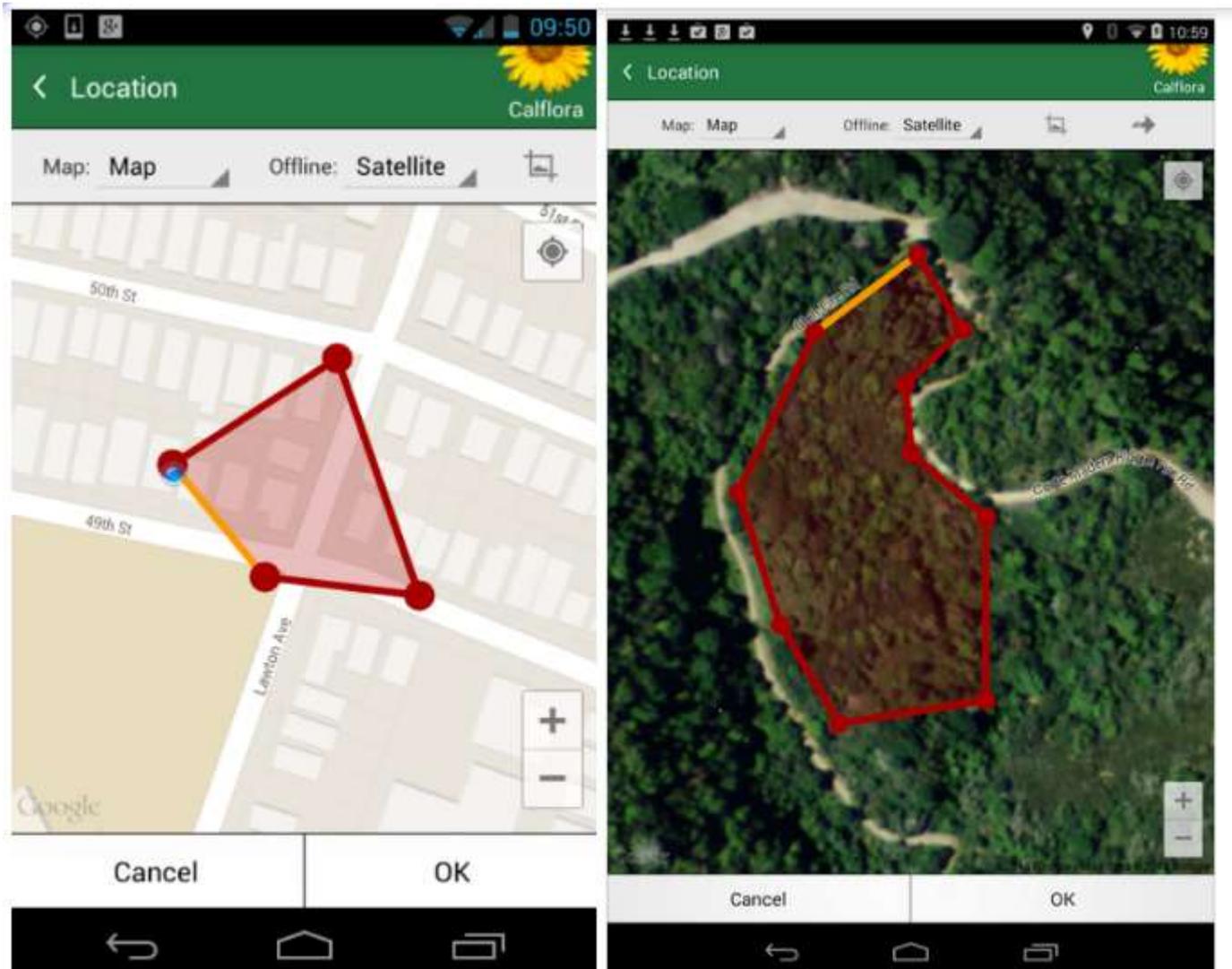
< Location  Calflora

Map: Satellite Offline: Satellite  



Cancel OK

# Drawing polygons



**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

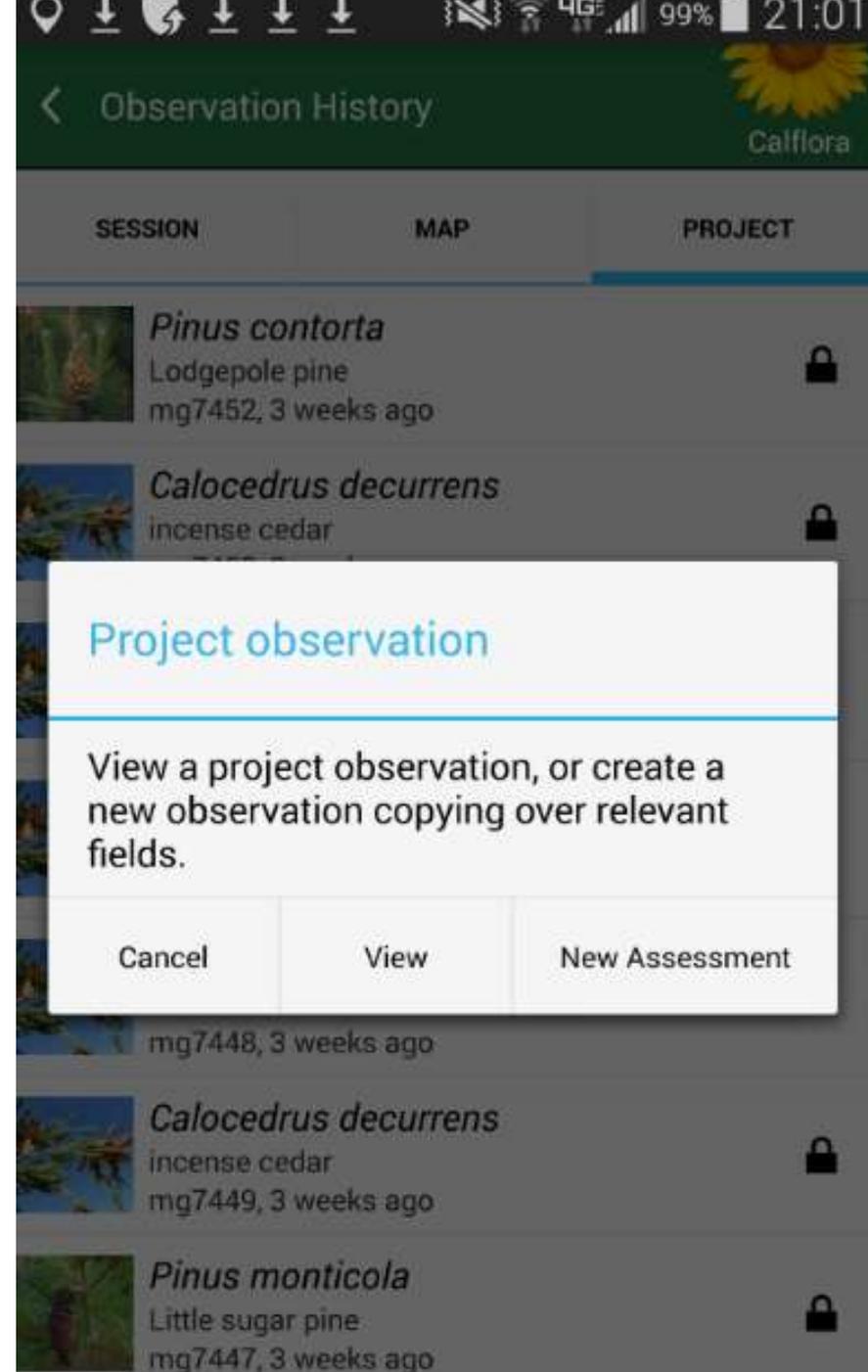
Herbicide  
Touch to select



## Observer Pro phone app

- Don't need data plan at all
- Don't need wifi in the field
- Do need wifi before you go in the field and after to login and (later) upload observations

Coming back the following year for a new assessment of the same patch



# Satellites and Accuracy



## Garmin GLO Bluetooth GPS for iOS and Android



## Dual XGPS150A

Universal Bluetooth® GPS receiver for portable devices



## GNS 2000 GPS MFI GLONASS RECEIVER





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