

Demystifying Esri Apps!

You, too, can make an easy-to-use field application and collect data to share!

Cal IPC Symposium

October 25, 2024

Sarah Godfrey

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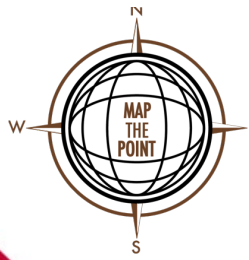


One People One Reef

Hofagie Laamle!



THE UNIVERSITY OF RHODE ISLAND GRADUATE SCHOOL OF OCEANOGRAPHY



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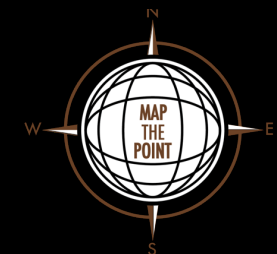
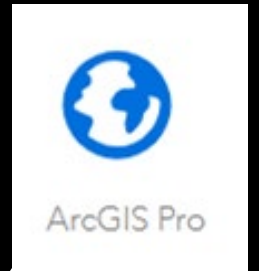
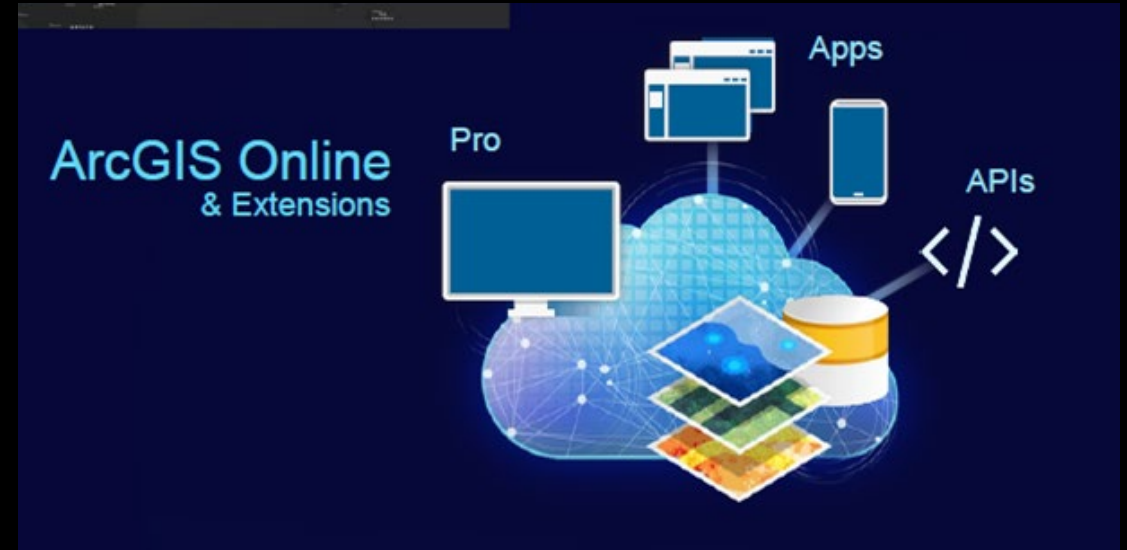
<https://www.linkedin.com/in/sarah-godfrey-7499863/>





Ways to collect and analyze information using Esri products

- ArcGIS Pro
- ArcGIS Online
- Survey123
- FieldMaps



ArcGIS Products

Overview of Apps





Offline

Paper and Pencil

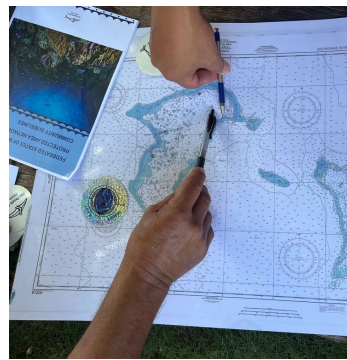
Who are you and how do you collect data?

PDA

Trimble

GPS

Mobile Application



Does anyone remember this?

- Post-processing
- Carry and haul
- Sensitive and cumbersome





Why is it important to capture data?

- 1) Identify goals
- 2) Set up attribute table
- 3) Collect as high accuracy as possible (?)



What you can do with “good” data

WMMAS

\$\$\$\$

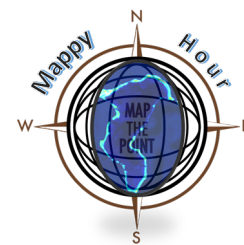
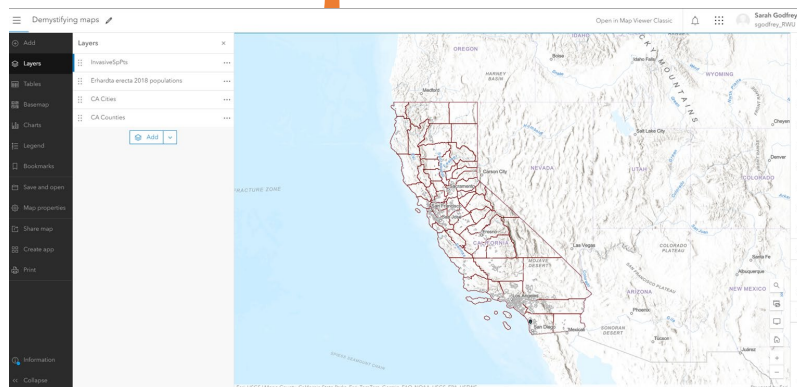
Web maps

Map Applications

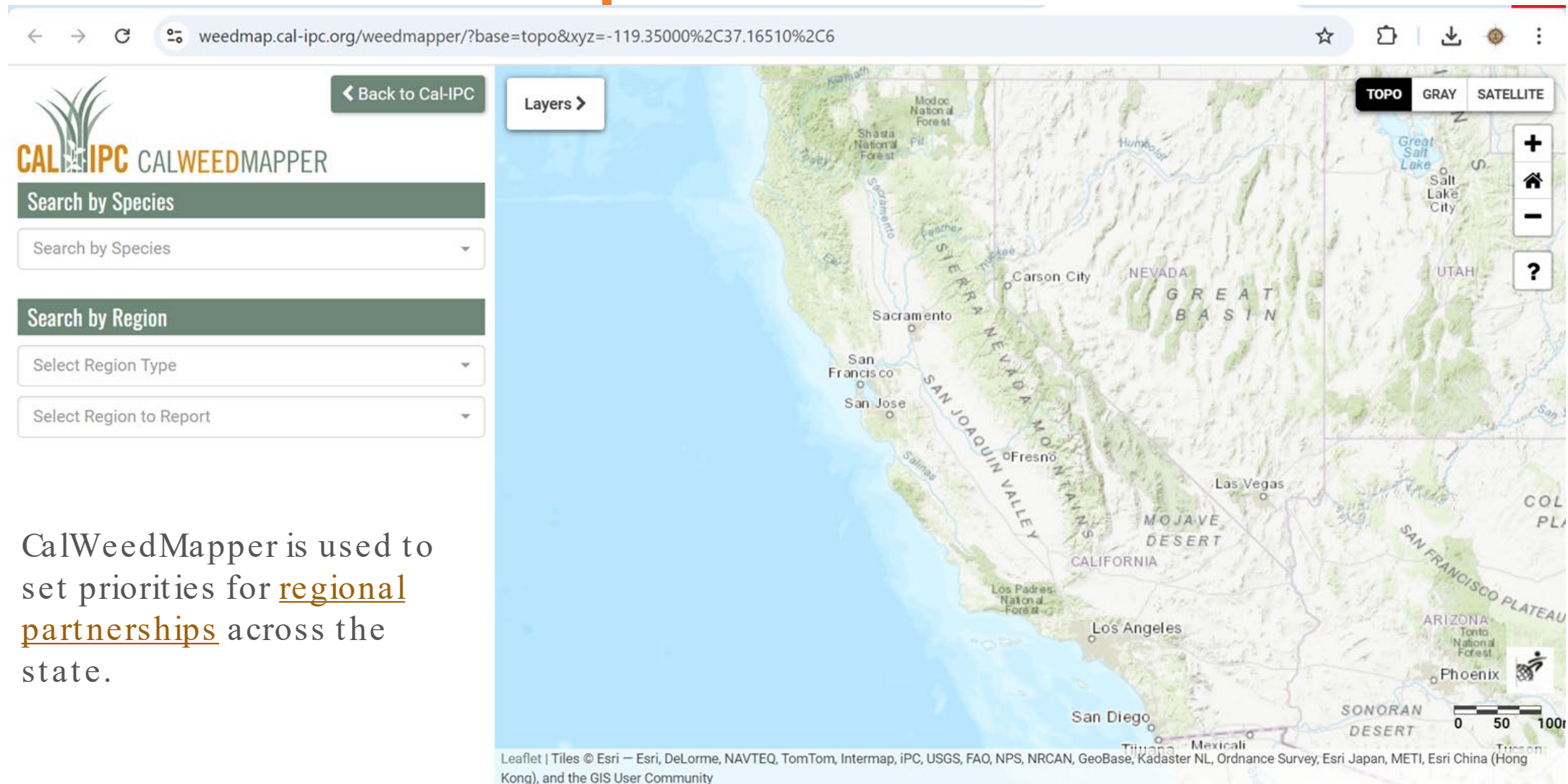
StoryMaps

Contribute to CalFlora database

Contribute to statewide opportunities to understand distribution and apply for invasive plant funding

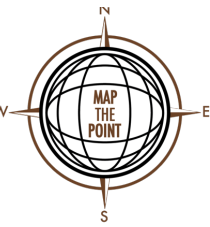


What else you can do with your data



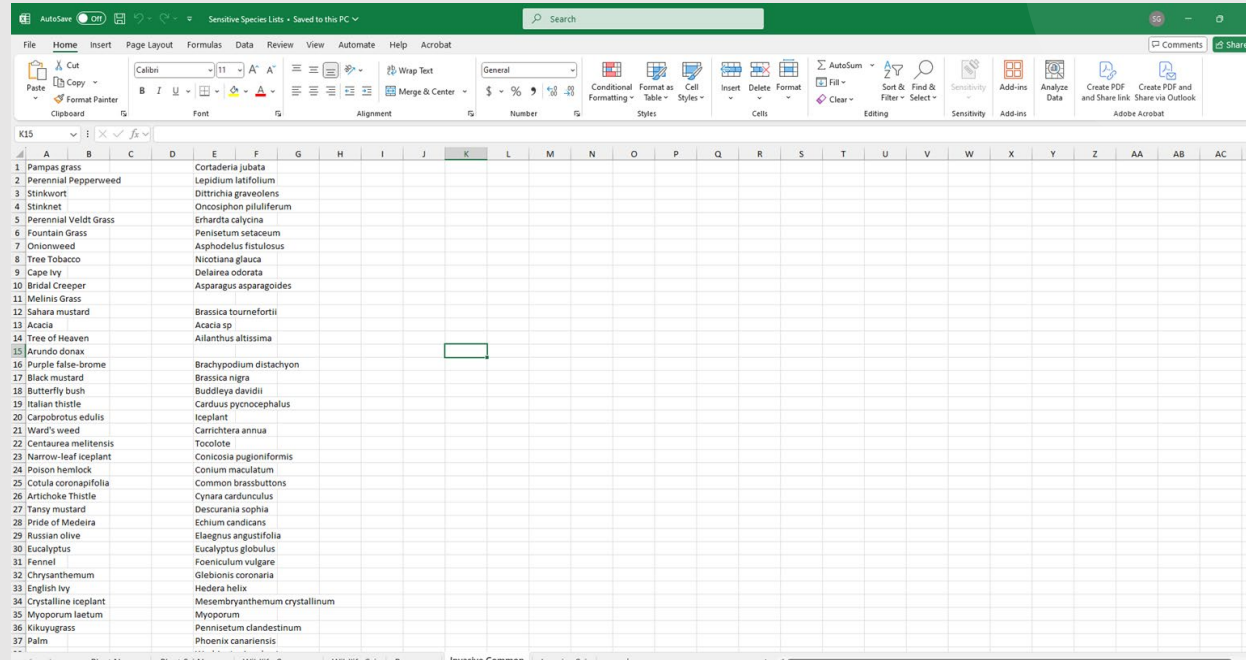
The screenshot displays the CalWeedMapper web application. The browser address bar shows the URL: `weedmap.cal-ipc.org/weedmapper/?base=topo&xyz=-119.35000%2C37.16510%2C6`. The interface includes a navigation bar with a "Back to Cal-IPC" button and a "Layers" dropdown. The main content area features two search filters: "Search by Species" and "Search by Region". The "Search by Region" filter is expanded, showing "Select Region Type" and "Select Region to Report" dropdown menus. The map area displays a topographic view of California, with labels for major regions like the Sierra Nevada, San Joaquin Valley, Mojave Desert, and Great Basin. Major cities such as Sacramento, San Francisco, San Jose, Fresno, Los Angeles, San Diego, Las Vegas, and Phoenix are marked. The map includes a scale bar (0 to 100 miles) and a compass rose. The footer text reads: "Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community".

CalWeedMapper is used to set priorities for regional partnerships across the state.



What is “good” data?

- Organized for analysis
- Easy to share
- Accuracy is appropriate to needs
- Standardized fields
- Dropdown menus

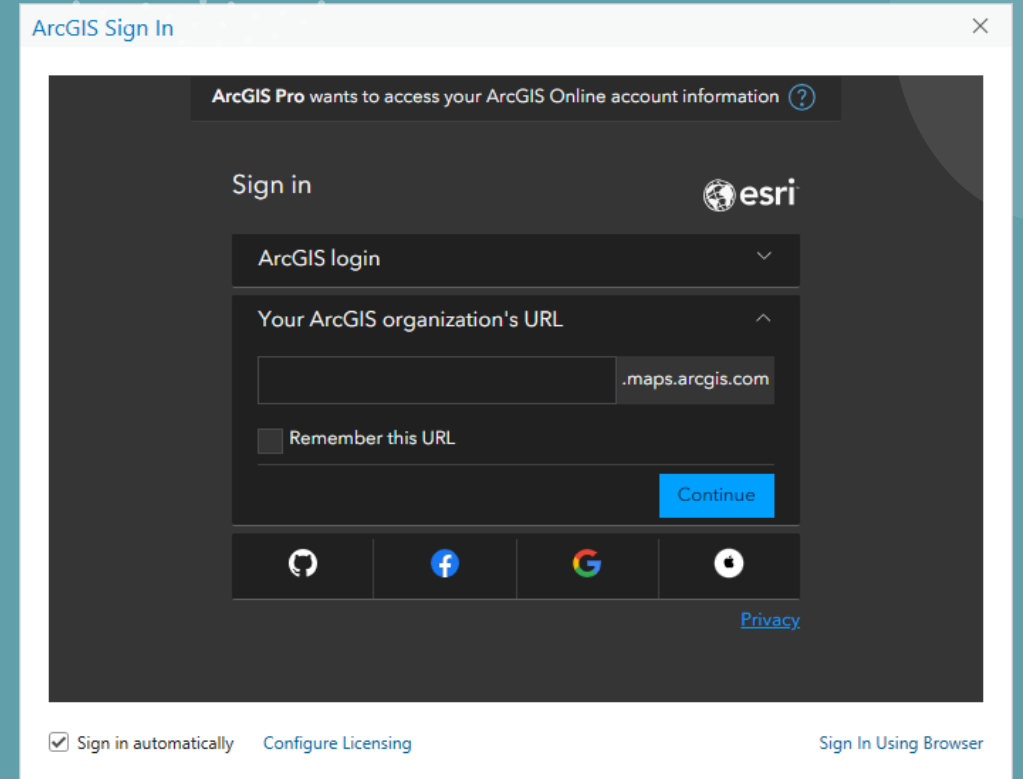


The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B
1	Pampas grass	Cortaderia jubata
2	Perennial Peppercorn	Lepidium latifolium
3	Stinkwort	Dittrichia graveolens
4	Stinknet	Oncosiphon piluliferum
5	Perennial Veldt Grass	Erhardta calycina
6	Fountain Grass	Penisetum setaceum
7	Onionweed	Asphodelus fistulosus
8	Tree Tobacco	Nicotiana glauca
9	Cape Ivy	Delairea odorata
10	Bridal Creeper	Asparagus asparagoides
11	Melinis Grass	
12	Sahara mustard	Brassica tournefortii
13	Acacia	Acacia sp
14	Tree of Heaven	Ailanthus altissima
15	Arundo donax	
16	Purple false-brome	Brachypodium distachyon
17	Black mustard	Brassica nigra
18	Butterfly bush	Buddleia davidii
19	Italian thistle	Carduus pycnocephalus
20	Carbobrotus edulis	Icelandic
21	Ward's weed	Carrichtera annua
22	Centaurea melitensis	Toccolote
23	Narrow-leaf iceplant	Conicosia pugioniformis
24	Poison hemlock	Conium maculatum
25	Cotula coronopifolia	Common brassbuttons
26	Artichoke Thistle	Cynara cardunculus
27	Tansy mustard	Descurainia sophia
28	Pride of Madeira	Echium candicans
29	Russian olive	Elaeagnus angustifolia
30	Eucalyptus	Eucalyptus globulus
31	Fennel	Foeniculum vulgare
32	Chrysanthemum	Glebionis coronaria
33	English ivy	Hedera helix
34	Crystalline iceplant	Mesembryanthemum crystallinum
35	Myoporum laetum	Myoporum
36	Kikyo grass	Pennisetum clandestinum
37	Palm	Phoenix canariensis

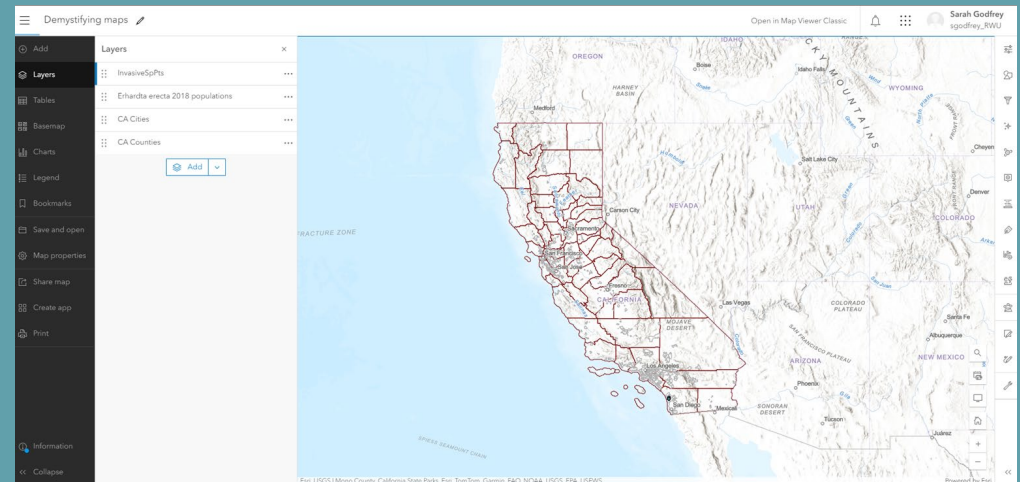
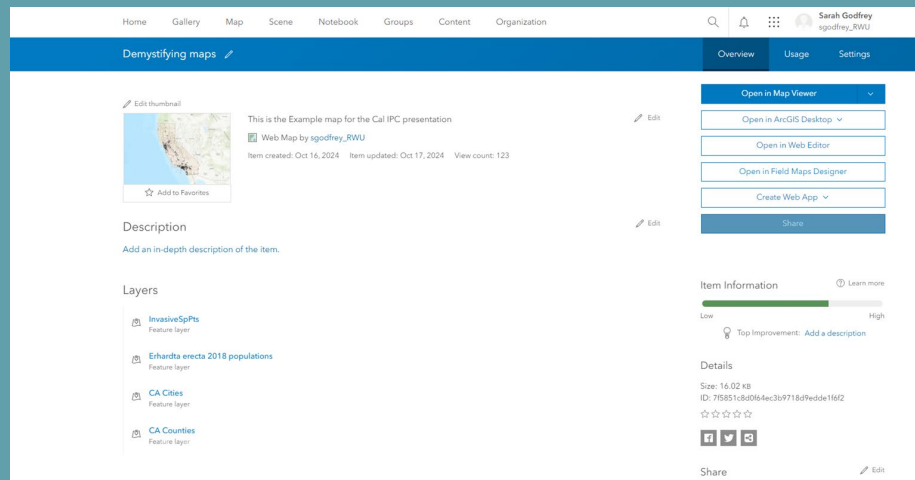
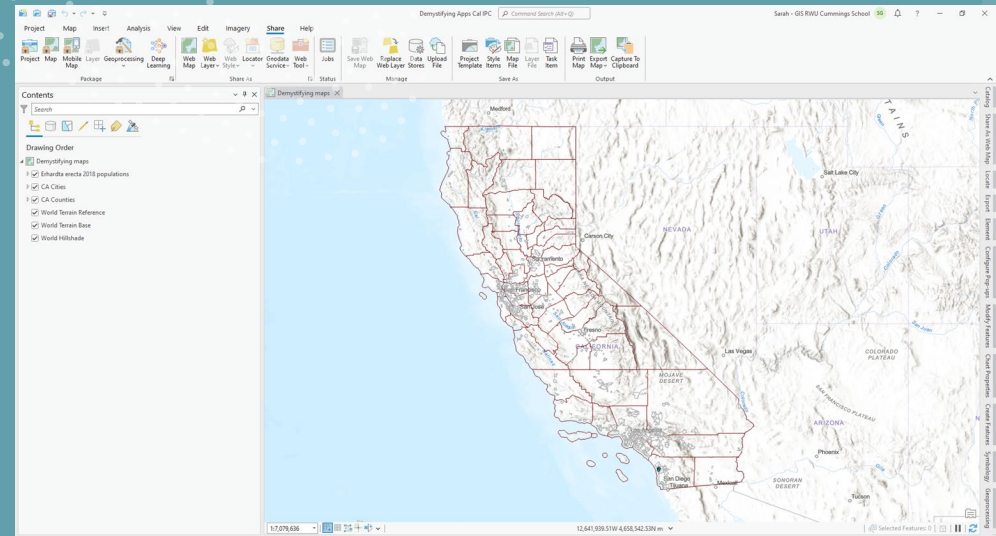


One login to ArcGIS Pro and ArcGIS Online

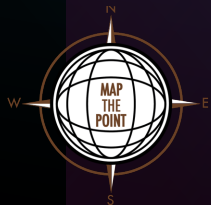


Portal from ArcGIS Pro to On line

Web Map= Apps



FieldMaps Or Survey123



Cancel Collect Submit

GPS accuracy 4 m

InvasiveSpPts ...

No location

Add Point

Take Photo Attach

Date_ *
10/17/24, 10:35 AM

Observer *
No Value

Common Name *

Example Cal IPC Survey!

Today's Date *
Thursday, October 17, 2024

Surveyor Name
 Sarah G Michael K Nikki V

Survey Point *
41°45'N 71°21'W ± 4.7 m

Species *
[Dropdown menu]

Scientific Name *
[Dropdown menu]

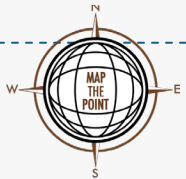
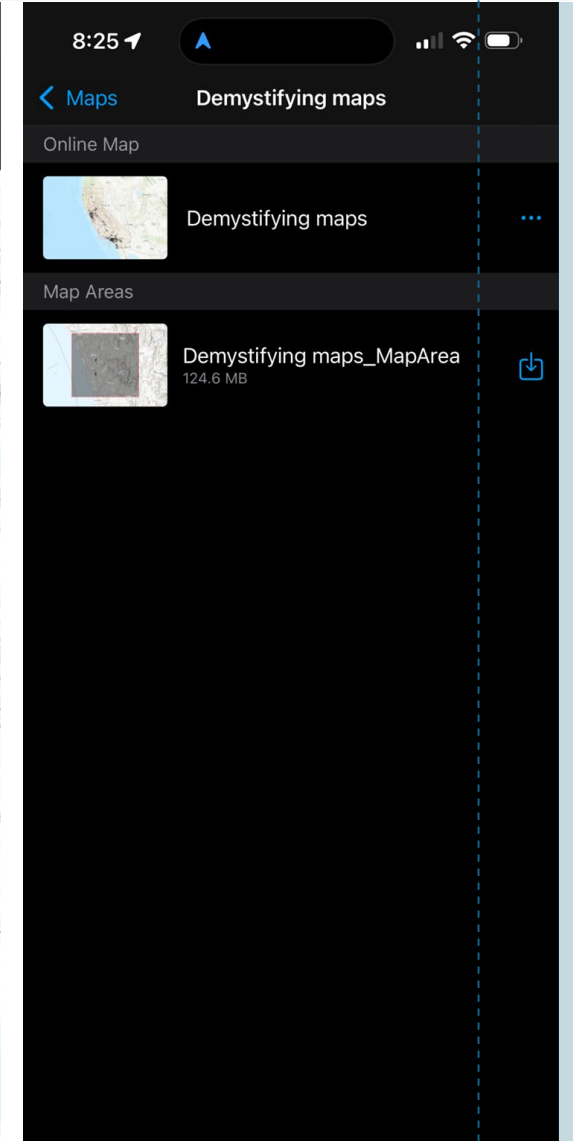
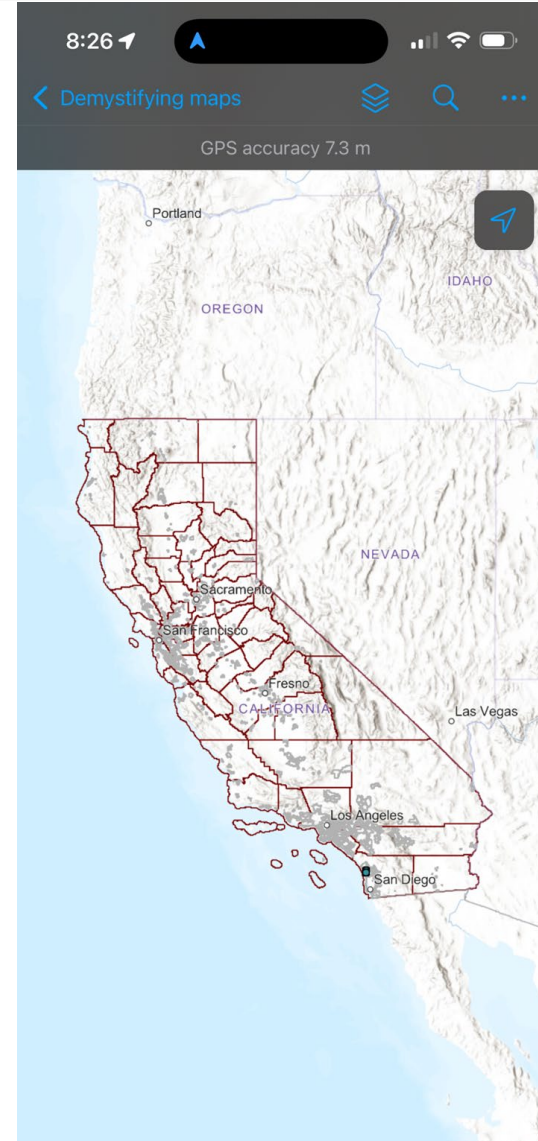
Invasive Status
 Native, NonInvasive
 NonNative, NonInvasive
 NonNative Invasive

Notes
[Text input field]

✓

When to use FieldMaps

- Map-based needs (navigation/location)
- Resurvey location
- Add layers to turn on/off
- Customized Offline Map Areas
- Points, line, polygons



When to Use Survey123

Example Call

Today's Date *
Thursday, October 17, 202

Surveyor Name
 Sarah G Michael K Nikki V

Common Name *

Scientific Name *

Survey Point *

Invasive Status
 Native, NonInvasive
 NonNative, NonInvasive
 NonNative Invasive

Notes

Form-based field data collection

Quick capture of information

Easy analysis and Excel output

Web based for simple forms

Desktop Connect for Complex Forms

New survey

Using the web designer

Blank survey

- Start from scratch
- Design your own survey
- Use a drag-and-drop editor

Get started

Using Survey123 Connect

Template survey

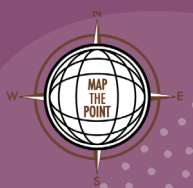
- Browse industry templates
- Pre-configured questions
- Use a drag-and-drop editor

Get started

Survey123 Connect

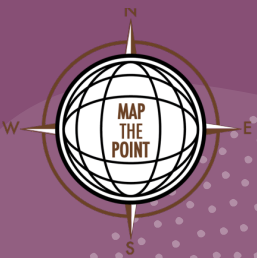
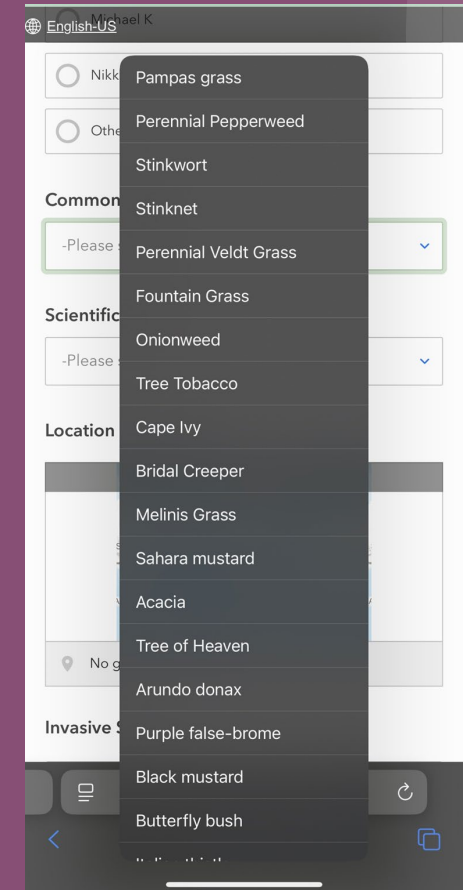
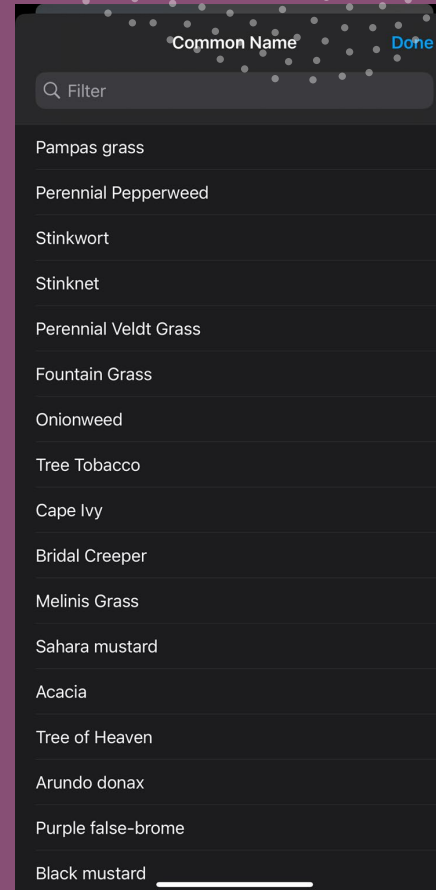
- Use a desktop application
- Full smart form capabilities
- Edit an XLSForm spreadsheet

Get started



How you collect data is how it is - so set it up for success!

- 1) No post processing/auto correction
- 2) Attributes and organization
- 3) Use in querying and analysis



FieldMaps: How to set up data collection

Maps > Demystifying maps > Erhardia erecta 2018 populations

Resources | SG Sarah

Overview
Forms
Geofences
Offline
App settings
Sharing
Open
What's New
Collapse

Forms

Find content

Layers

- Erhardia erecta 2018 populations
- CA Cities
- CA Counties

Basemap

Add layers

Form Templates

Start configuring a form for the layer
Drag fields and form elements into this area or convert the pop-up
[Convert pop-up](#)

Resources | SG Sarah

Form builder

Form elements

BASIC

- Barcode
- Date and time
- Number - Double
Decimal, e.g. 1.2
- Number - Integer
Whole, e.g. 1
- Text - Multiline
- Text - Single line

CHOICE

- Combo box
- Radio buttons
Recommended for up to 5 values
- Switch

LAYOUT

- Group
- Info

Fields

Fields store values within the layer

Add all (7) Delete

Find fields

- Common Name
(Cardia) abc
- Scientific Name
(Scilin) abc
- Native
(NatLive) abc
- Observer
(Observer) abc
- Date_
(Date_) abc
- Notes
(Notes) abc
- Date_
(Date_1) [calendar icon]

Related records

Form settings

Forms

Find content

Layers

- InvasiveSpPts
- Erhardia_area
- Erhardia erecta 2018 populations
- CA Cities
- CA Counties

Basemap

Add layers

Form Templates

InvasiveSpPts

Common Name

Scientific Name

Native

Observer

Date_

Notes

Date_

Form builder

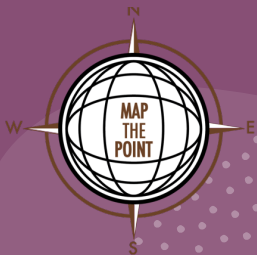
Form elements

Fields

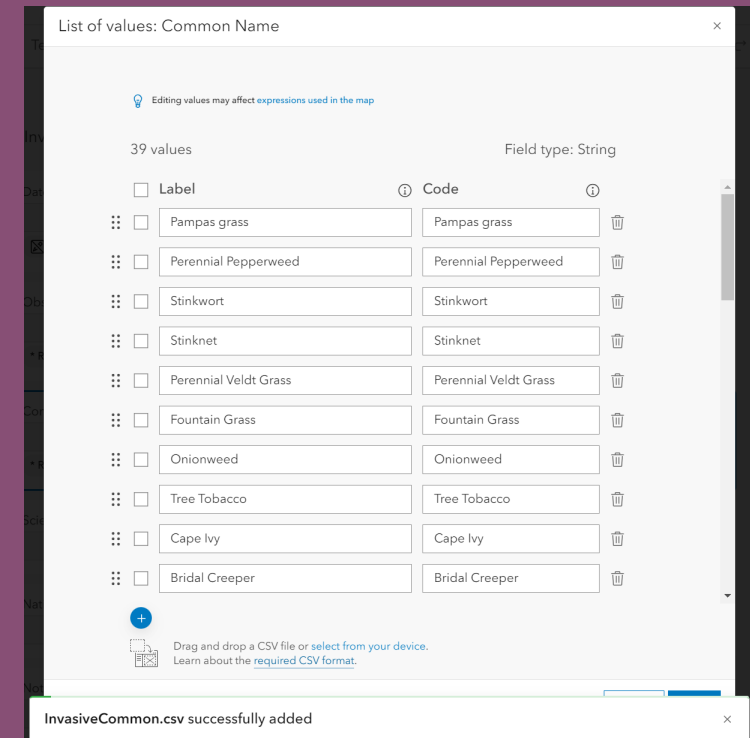
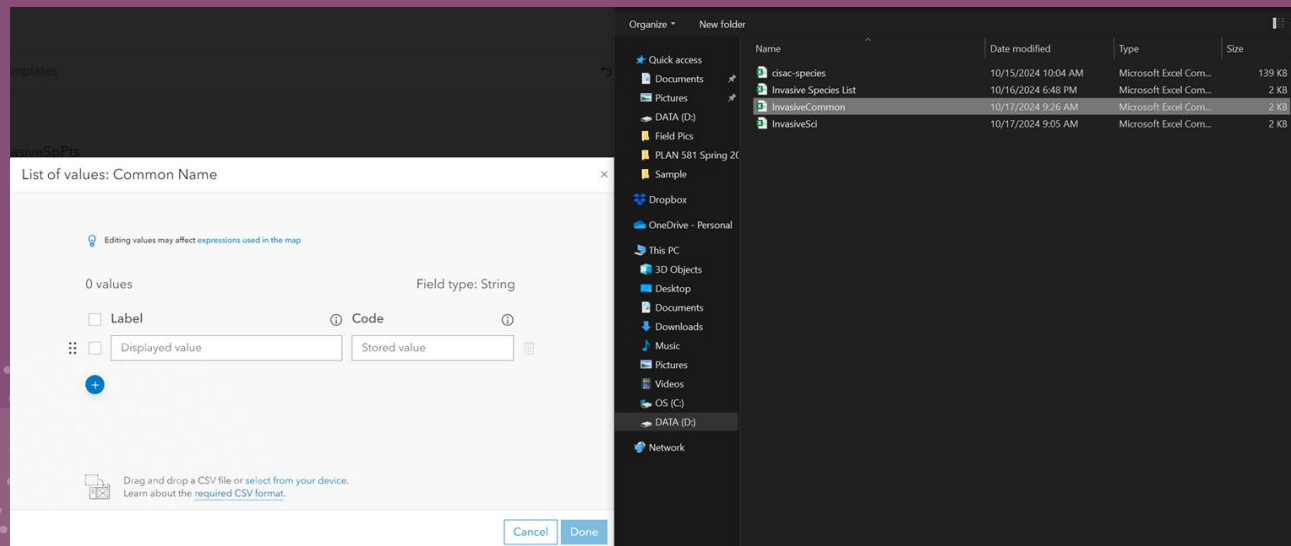
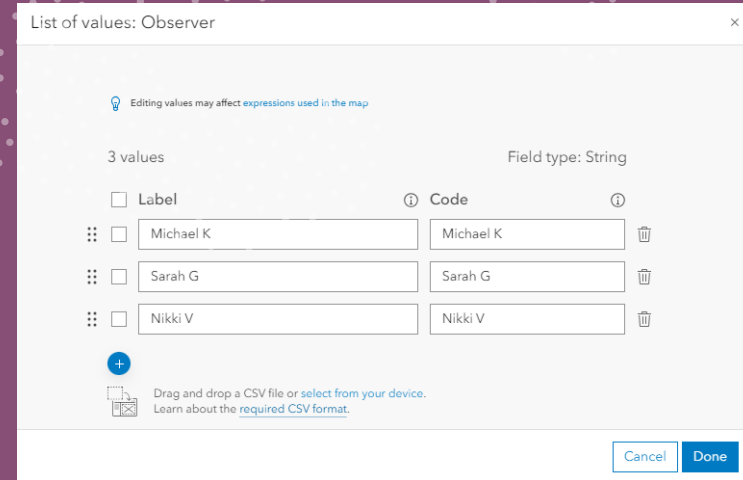
Fields store values within the layer

Related records

Form settings



FieldMaps: How to set up data collection



FieldMaps: How to set up data collection

InvasiveSpPts

Date_

* Required

Observer

Common Name

Scientific Name

Native

Notes

Field name: Date_1

Field type: Date

Date and time will be localized

Input type: Date and time

Description:

Start date:

End date:

Default date:

Calculated expressions

Search expressions

Create a new expression and apply it to one or more form elements

+ New expression

Calculated expression

New expression

```
1 return Date(Now())
```

Output Console Log

date: Oct 17, 2024, 8:51:24 AM Eastern Daylight Time

Cancel Done



FieldMaps: Offline Maps

Maps > Demystifying maps Resources Sarah

Overview Offline Forms Geofences App settings Sharing

Offline

Enabling the map for offline use allows it to be downloaded in apps that support offline workflows and used in locations without an internet connection.

Content
Ensure content within the map can be taken offline

Map areas
Create and manage offline map areas

Map areas create a streamlined experience for opening and working with maps offline. Create map areas to decrease download times and define the relevant data and area of the map mobile workers can take offline.

Map contains 1 out of 16 possible map areas.

[Manage areas](#)

Features and attachments
Determine feature and attachment behavior during sync

Basemap and tile package
Set the offline basemap

Open What's New Collapse

Manage areas

Offline map areas
Manage your offline map areas below

Filter offline areas

Demystifying maps_MapArea

[+ Create offline area](#)

Map showing a red rectangle indicating the selected offline map area. The map includes labels for Oceanside, Vista, San Marcos, Encinitas, Cardiff of the Sea, Rancho Santa Fe, Solana Beach, Escondido, and Poway. The Carlsbad Canyon is also visible.

Find address or place

© 2024 Esri, NASA, NGA, USGS | SanGIS, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, MET/NASA, USGS, Bureau of Land Management, EPA, NPS, USZDA, USFWS
Map data powered by Esri



FieldMaps: Offline Maps

The screenshot shows the ArcGIS Online interface for a tile layer named "NAIP_til". The top navigation bar includes Home, Gallery, Map, Scene, Notebook, Groups, Content, and Organization. The user profile for Sarah Godfrey (sgodfrey_RWU) is visible in the top right. The main content area is divided into several sections:

- Thumbnail:** A small map thumbnail with an "Edit thumbnail" link and an "Add to Favorites" button.
- Description:** A text area containing the description: "This is to be used for basemap in ArcGIS Offline Base Map". It is hosted by sgodfrey_RWU. Item creation and update dates are both Oct 16, 2024, and the view count is 17.
- Layers:** A list containing the layer name "NAIP_til".
- Terms of Use:** A text area for adding special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.
- Comments:** A section for comments, currently showing 0 comments.
- Item Information:** A progress bar showing the item's completion status, ranging from Low to High. A "Top Improvement: Add a description" notification is present.
- Details:** Metadata including Source (Map Service), Created from (NAIP_til, Tile package), Size (2,742.55 MB), and ID (455be9b197c24250b65d64451bc1f6ac). It also includes a star rating and social media sharing icons for Facebook, Twitter, and Email.
- Actions:** A vertical menu on the right side with buttons for "Open in Map Viewer", "Open in Scene Viewer", "Open in ArcGIS Desktop", "Share", and "Replace Layer".

The screenshot shows the "Offline" settings dialog box in ArcGIS. The "Offline" toggle is turned on. The dialog provides instructions on enabling offline use and lists several configuration sections:

- Content:** A dropdown menu to ensure content within the map can be taken offline.
- Map areas:** A dropdown menu to create and manage offline map areas.
- Features and attachments:** A dropdown menu to determine feature and attachment behavior during sync.
- Basemap and tile package:** A section for setting the offline basemap. It includes a note that the tile package must cover the areas you plan to work with and have the same spatial reference as the web map. Below this, there are three radio button options:
 - Basemap defined by the web map
 - Tile package on the device
 - Tile package from my organization** (selected)A "Browse" button is next to the selected option, with "NAIP_til" listed below it. "Cancel" and "Save" buttons are at the bottom right.



FieldMaps:

Map Settings
Layer Settings
Sharing levels

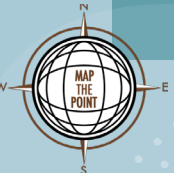
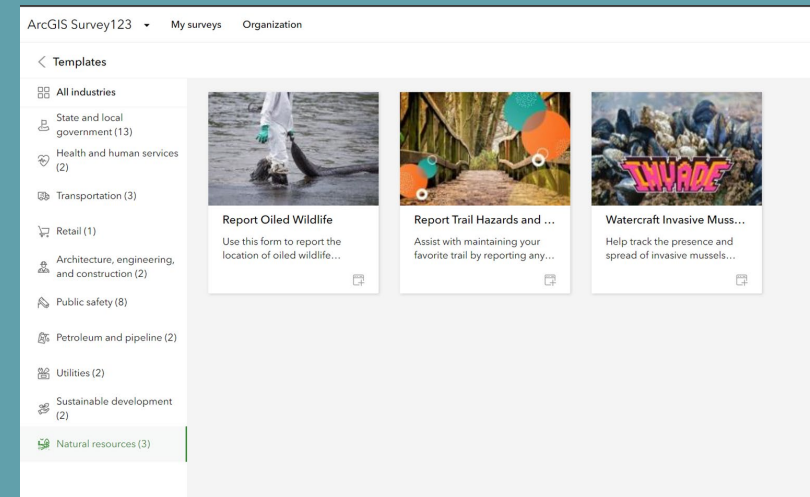
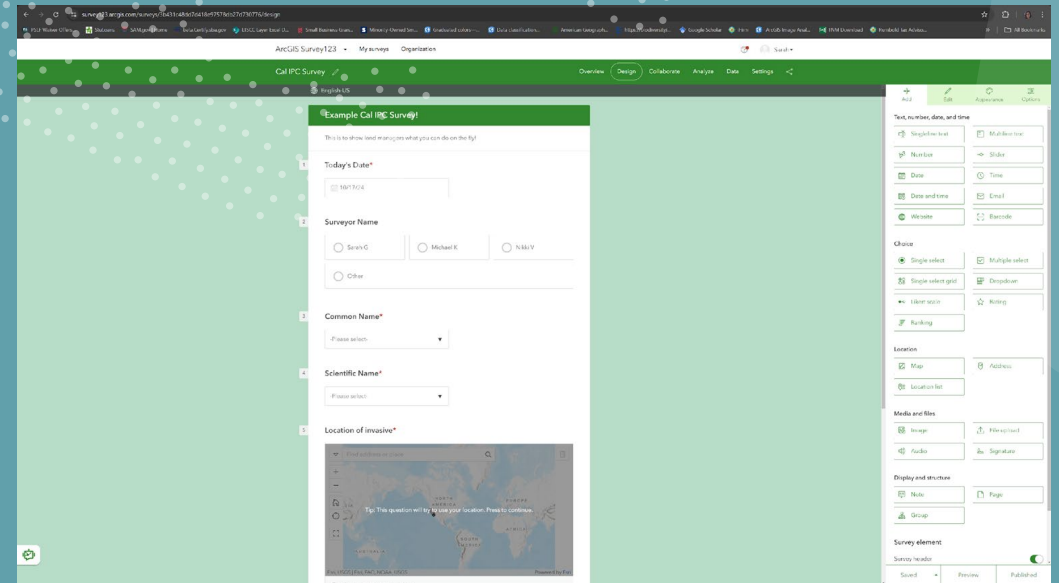


Survey123:

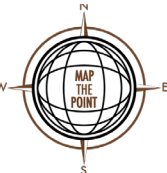
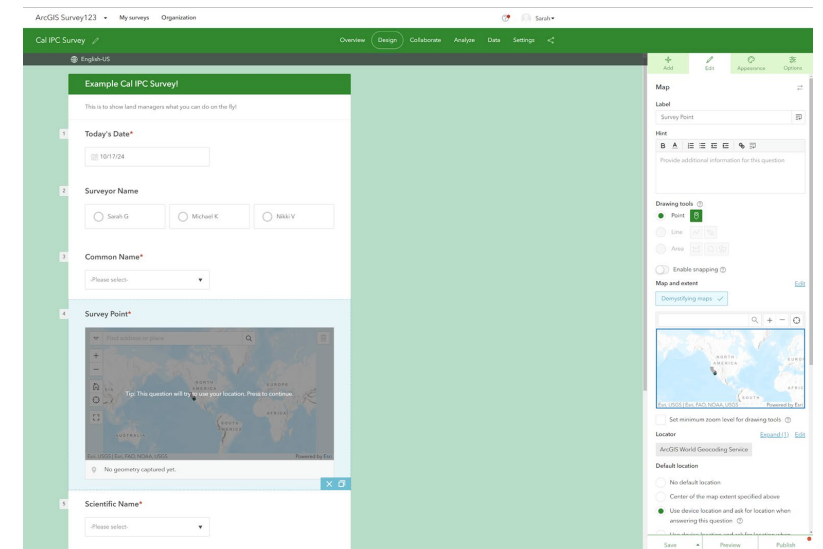
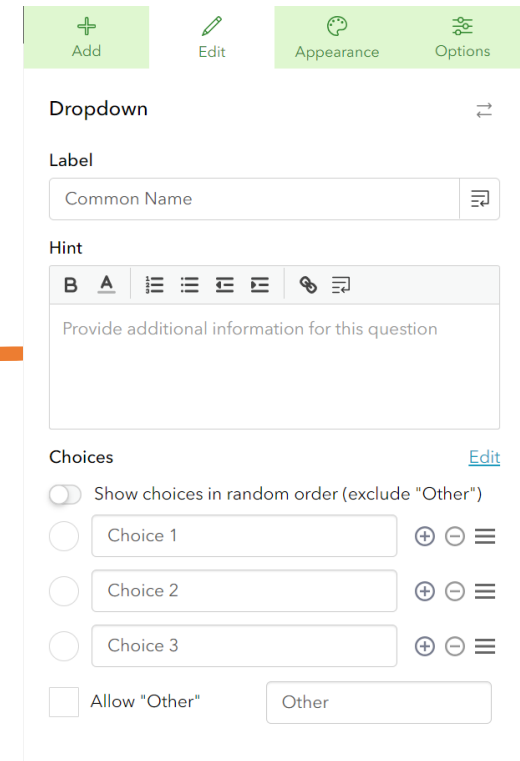
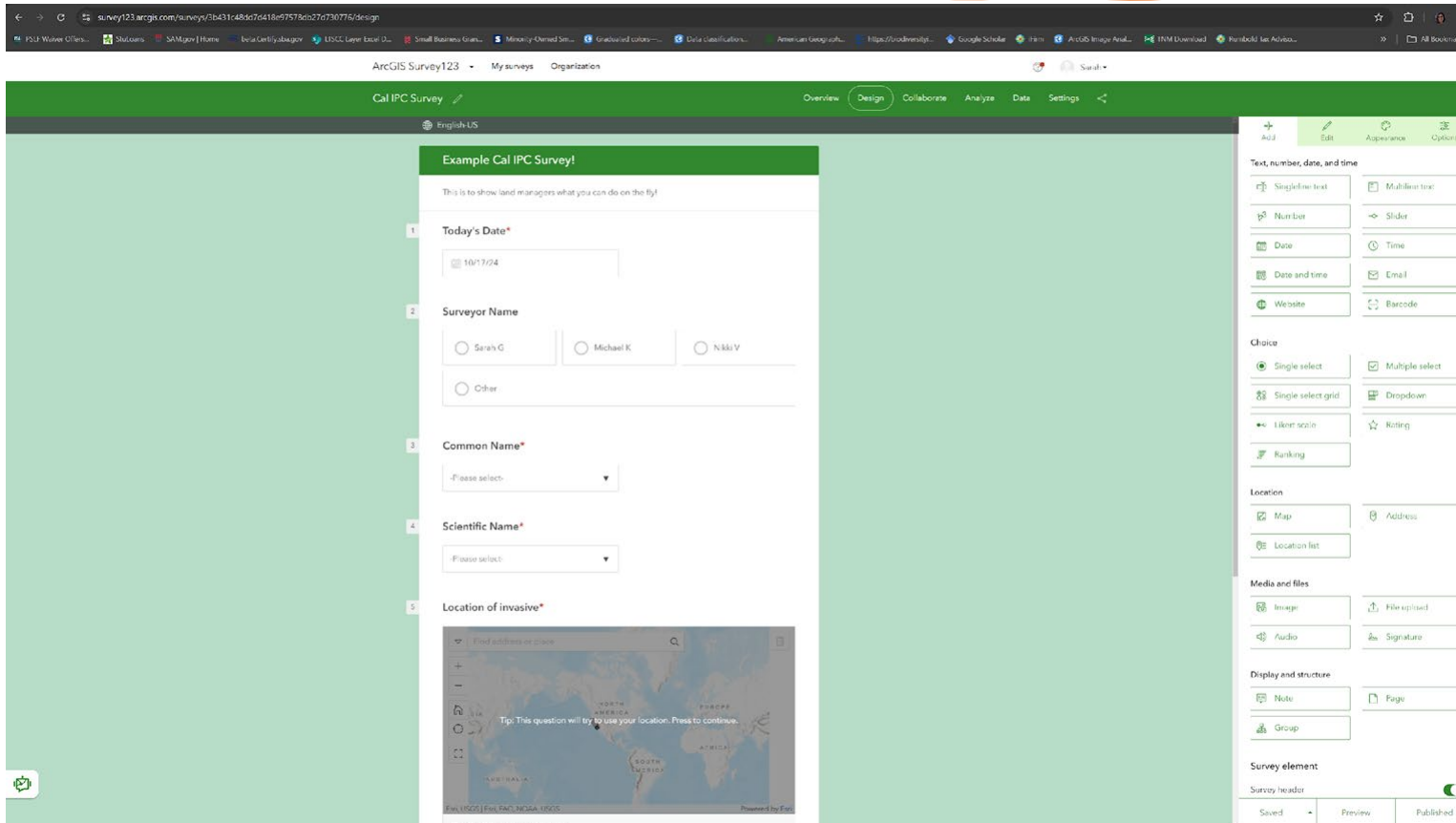
How to set up data collection

Browser

- Template
- Drag and Drog



Survey123: How to set up data collection

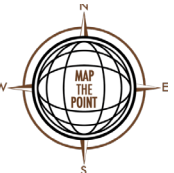
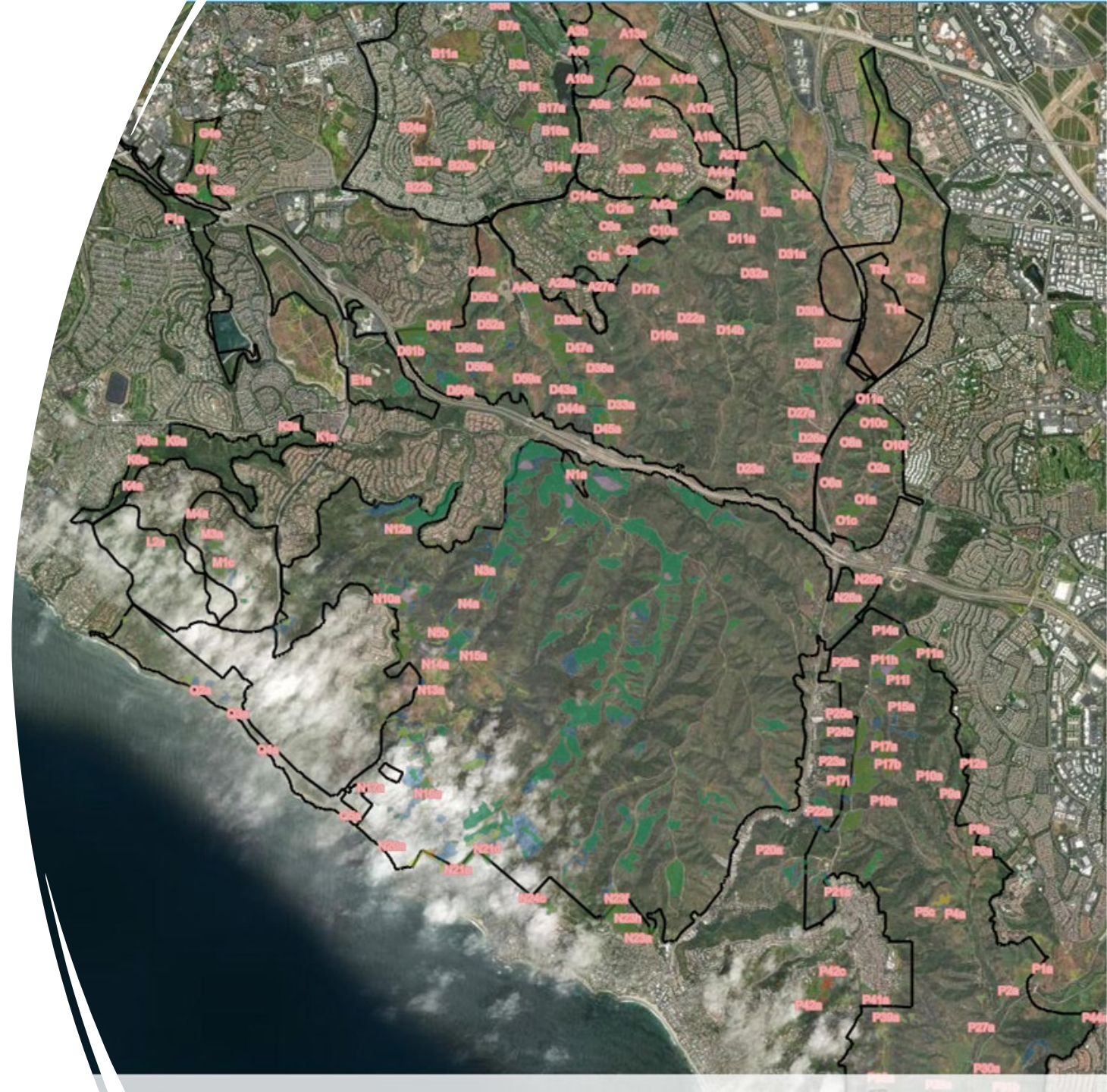


Survey123:
Try it in your
browser or app!



Where does the data go?

- ArcGIS Online
- ArcGIS Pro through Portal
- Dashboards
- Web Apps





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ECOLOGY, CONSERVATION, TECHNOLOGY

This is the beginning of your journey!

Reach out with questions and look forward to future Cal-IPC geospatial technology trainings!





Resources from Sarah Godfrey's Demystifying Esri Apps Presentation Cal-IPC Symposium

October 25, 2024

Questions from the audience:

Tristan- Do you have to have both apps open at the same time? Or does survey123 have a mapping interface?

Survey123 does not have a mapping interface, but it can be embedded into Field Maps applications so that you don't have to use two apps. [This link has more information about how to Integrate between Apps.](#)

Esther Cole Adelsheim: What is the most helpful way to migrate to Arcpro from arcmap

There are many free trainings available from Esri, including [Migrating to ArcGIS Pro from ArcMap](#), [ArcGIS Pro Basics](#), and [ArcGIS Online Basics](#). If you need additional help, please contact Sarah Godfrey at mapthepoint@gmail.com

Erin Merrill: Is there a description of the esri to calflora data upload workflow somewhere?

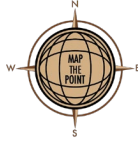
CalFlora is currently developing an API to connect organizations and the AGOL accounts to the Statewide database more seamlessly. Stay tuned for this development and for a suggested protocol from Cal IPC.

Michael Clegg – Why do they make it so difficult to draw a polygon in Pro compared to ArcGIS?

I haven't experienced this and am curious to hear more about the issues that you've faced. Feel free to reach out to explain more!

Ivette Loreda: It seems that Field Maps with the form builder has taken a lot of the functionality of 123 and made it more user friendly.

Esri has invested lot of resources into the low- and no-code graphic user interface to allow people to easily create forms in both apps. They are expanding capabilities in offline data capture for Survey123 and expanding tools in both. This is good news for land managers!



Kevin Flammer: Any open source tools for those that have limited access to software or sufficient licensing?

I have used Esri and am fortunate to partner with organizations to maintain access to the large suite of products that they offer. There are quite a few [free resources](#), but I have never used them. In all situations, keep quality csv files and your species lists/data organized!

David Bakke: Is survey123 a free app or does it require a fee paid to esri?

You need access to Survey123 designer in order to create a survey, which is a paid fee. For nonprofits and some government organizations, Esri offers an extreme discount on their AGOL and Desktop licenses (\$100/user/year). Once you create the survey, the consumer does not need to have a paid license or even the application. It can reach a broad audience through the browser interface.

Kyle Bianchi: is there a place to suggest/request features for applications such as FieldMaps?

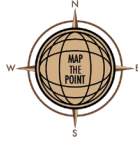
This [Esri Community Page](#) is how they request submissions. I have heard that attending Esri conferences and calling out their trainers in person also helps!

Comments about the apps (besides commiseration about toilet plunger) from the audience:

Erin Merrill:

Survey123 is much better for random volunteers because they can use through web browser without app, whereas Field Maps is a great tool for regular staff to be trained in

Joanna Tang: Yay Survey123 and Field Maps are great! Digital data collection is great, it improves accuracy, reduces errors, and makes post-processing and analysis so easy!



Links that I have prepared for you:

I have created a [Google Folder](#) for resources associated with this presentation, in addition to a series of short training videos.

Migrating to Field Maps

Migrating to ArcGIS Pro

PDF of presentation

Links to Resources

[Using the Portal to link Content between ArcGIS Online and ArcGIS Pro](#)

[Brief overview of Apps in AGOL](#)

Resources with an Esri license:

Training.esri.com

[Survey123 Basics](#)

[Field Maps Designer Basics](#)

Esri is touted for creating accessibility to Ecosystem resources with the Living Atlas, ArcGIS Online authoritative data, and now the link with iNaturalist

Free Resources to Explore:

[ESRI StoryMaps](#)

[Library of Congress Applications](#)

[Living Atlas](#)

[Living Atlas imagery comparison](#)

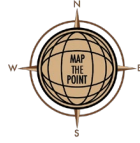
Open Source Field Applications:

<https://gisgeography.com/field-apps-data-collection-tools/>

[Michigan Invasive Species Model](#)

[iMap Invasive species](#)

Additional questions? Reach out to me at mapthepoint@gmail.com!



Recent Natural Areas Association webinar on mapping invasive species:

<https://www.youtube.com/watch?v=WaDSQXUoolI>

They have a [list of follow-up resources](#) available as well

Thank you for attending the Symposium and for your interest in Geospatial Technologies!

Additional questions? Reach out to me at mapthepoint@gmail.com!