

Standard Operating Procedure (SOP) #8

Using ArcGIS Field Maps Application

Version 2.0 (August 30, 2022)

Change History

New Version #	Revision Date	Author	Changes Made	Reasons for Change	Previous Version #
2.0	8/30/2022	Mark Wasser	Updated content from previous Collector application instructions to explaining how to use current Field Maps application. Updated figures and added captions.	Updates reflect change from using Collector to Field Maps.	1.0

Only changes in this specific SOP will be logged here. Version numbers increase incrementally by hundredths (e.g., version 1.01, version 1.02) for minor changes. Major revisions should be designated with the next whole number (e.g., version 2.0, 3.0, 4.0). Record the previous version number, date of revision, author of the revision, changes made, and reason for the change along with the new version number.

Purpose

This SOP explains how to use the ArcGIS® Field Maps Application for Pacific Island Network (PACN) Focal Terrestrial Plant Community (FTPC) and Established Invasive Plant Species (EIPS) Monitoring Protocols. This application can be used on any currently supported mobile device and works with both Android and iOS devices. PACN currently uses Android devices, and the screenshots and examples provided are generated from that operating system environment. Some screenshots may be from Collector for ArcGIS® (the previous version of Field Maps), but functionality is similar.

Pre-Field Preparation

Equipment

At this time, a mobile device (phone or tablet) is the only equipment needed for the use of ArcGIS® Field Maps as a field data collector.

Device Preparation

1. Ensure that the ArcGIS® Field Maps is installed on your device. If it is not on your device, download (free + IT approved) and install from either the Google Play or Apple Store.
2. Open Field Maps and sign in (Figure SOP 8.1).

- a. Select the option to Sign in with ArcGIS® Online.
- b. On the login screen select Enterprise login, and then enter “nps” in the blank space under Your ArcGIS® organization’s URL.
- c. On the next screen tap the blue Nation Park Service button under Enterprise login.
- d. You will be taken to a DOI sign-in page. Enter your active directory credentials and tap Sign in.
- e. After entering your NPS/DOI credentials, you will receive a message that “For security reasons, we require additional information to verify your account. Select “Sign in with Microsoft Authenticator” from the two options at the bottom of the page.

***Note:** You will need Microsoft® Authenticator setup and linked to your NPS DOI account to complete this step. Please contact the PACN GIS Specialist and/or IT to complete setup of Microsoft Authenticator.*

- f. Approve the Microsoft® Authenticator push to your linked mobile device to complete sign-in to ArcGIS® Field Maps.

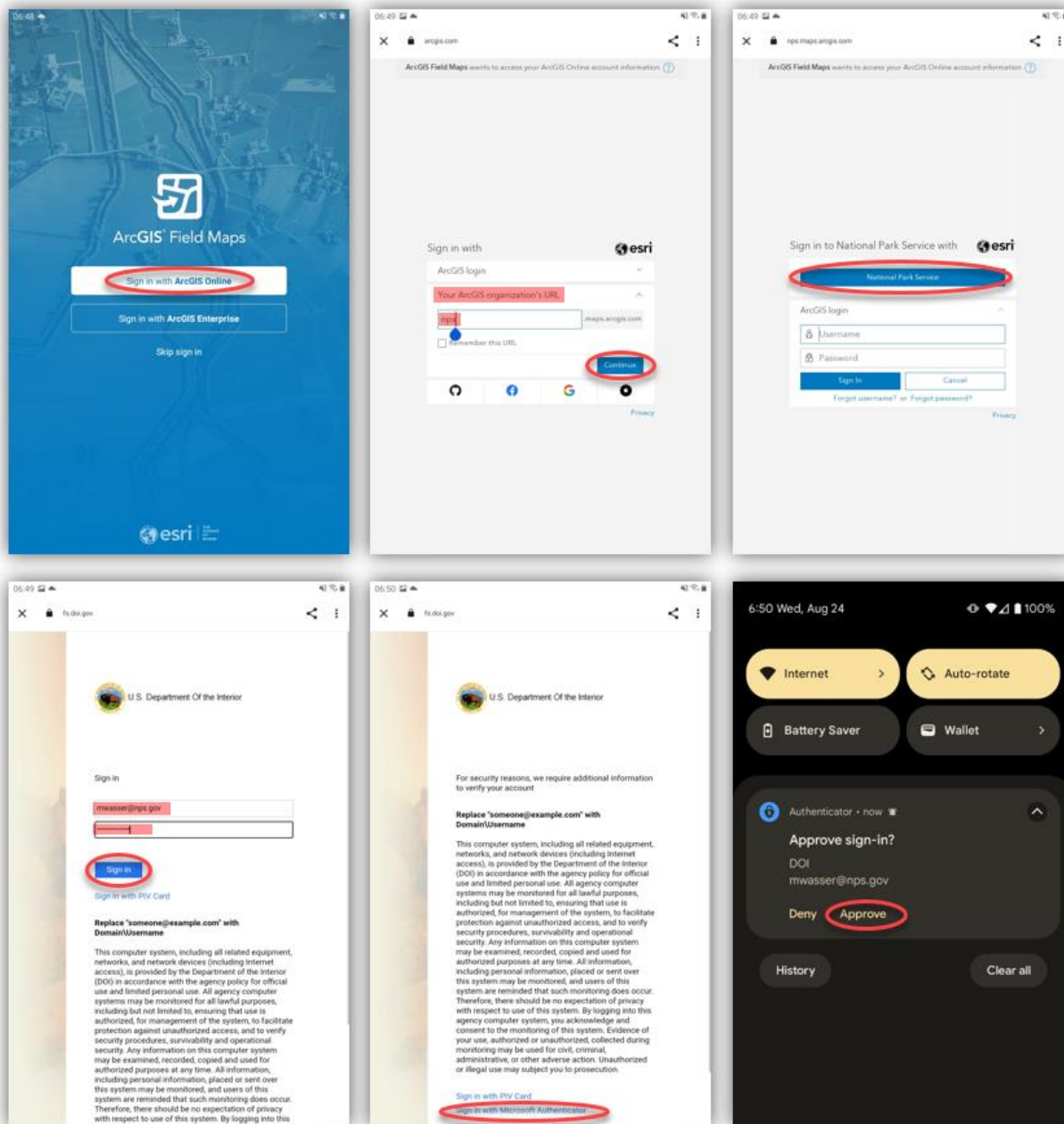


Figure SOP 8.1. Sign in procedures for ArcGIS® Field Maps.

- Once successfully logged in, the main landing page (sometimes called the Maps List) of Field Maps will display all Maps and Groups associated with your profile automatically. The PACN GIS Specialist will ensure all content is deployed to the appropriate users. Find the desired map and tap to open and explore content (see [Appendix SOP 8.a.](#) for basic Field Maps functionality information). If not opening a new session in the app, the most recently opened map will display as *Current* on the top of the map list. If there are any maps with areas downloaded onto the device for offline use, those maps will display near the top under a section named *On Device*.

4. Access your profile settings by clicking/tapping on the small icon of a person in the upper right-hand corner (Figure SOP 8.2.). You will be taken to a screen of your profile settings. Ensure profile settings are as follows:

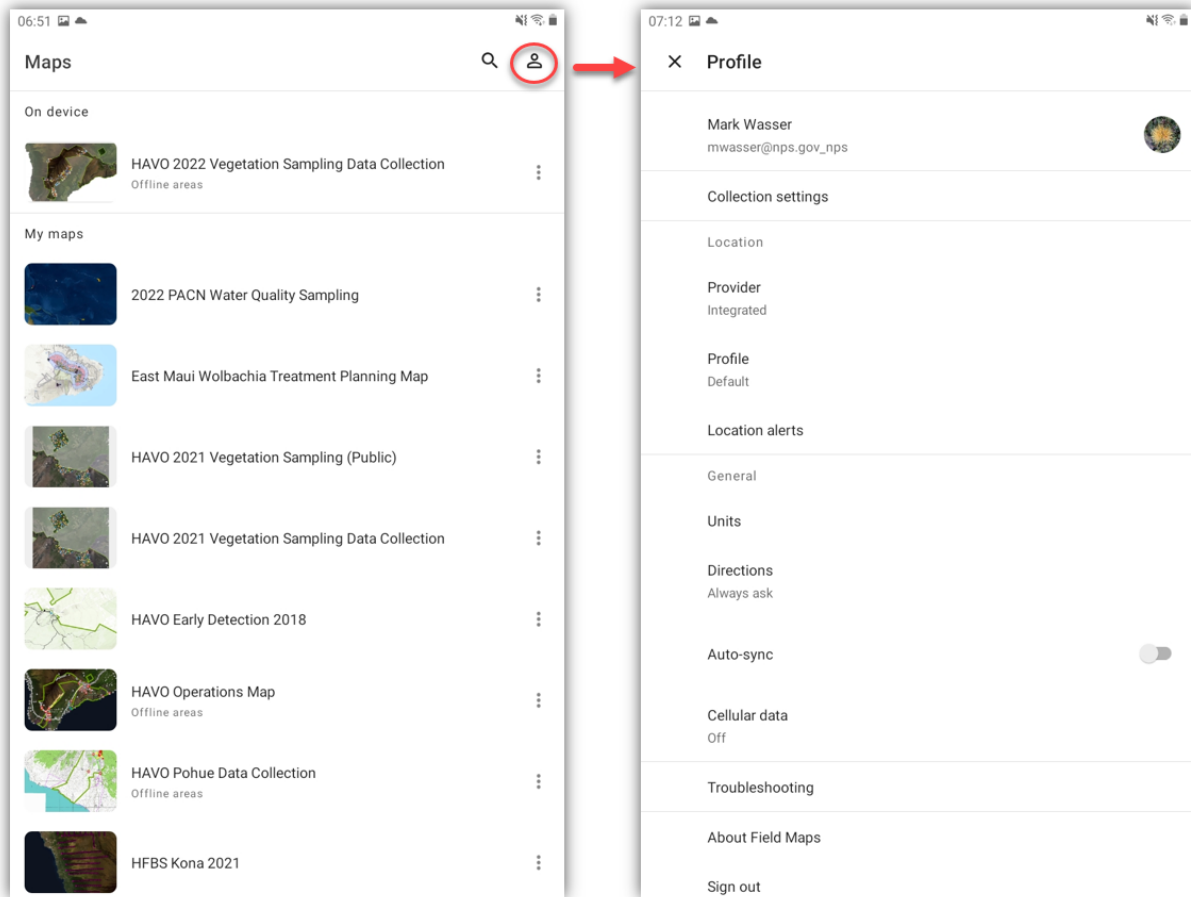


Figure SOP 8.2. Accessing the user profile in order to set up profile settings.

a. Within Units

- i. Measurement Units = Meters
- ii. Coordinates = Automatic
- iii. Distance = Meters
- iv. Area = Hectares

b. Within Collection Settings


- i. Accuracy = 10 m (this setting controls the minimum accuracy at which the app will allow features/data to be collected)
- ii. GPS averaging = off
- iii. Streaming = Distance 3 m
- iv. Photo upload size = Large

- v. Show Related types = N/A
- vi. Snapping = as preferred by user
- c. Provider = integrated
- d. Profile = default
- e. Units = *as desired* Metric for data recording
- f. Download & sync = Wi-Fi only

Map Preparation

1. Select the map used for the current field season. For FTPC and EIPS this will be named – “[PARK]¹ [YYYY]² Vegetation Sampling Data Collection”.
2. Most PACN field data collection takes place in a disconnected environment. To collect data in this environment, specific areas of the map must be taken ‘offline’. Complete the following steps to take map areas offline. **This must be done in a connected environment before going into the field and can be done two ways – with or without predefined offline maps areas.**

If the GIS Specialist has setup predefined offline areas (preferred):

- a. Tap the title of the desired map name on the map list screen. This will take you to the main landing page for that map.
- b. Under will be a section named *Map Areas*, tap the download icon  to the right of the map area you wish to download. That map area will move into the *On Device* section of the screen and download progress will be displayed. Once downloading is complete, the map area will display a checkmark below the area title, along with information about how much data the map area is using and the last time synced (immediately following the download of the map area this will display as “now”) (Figure SOP 8.3).

¹ 4-letter park code (e.g., AMME, HALE, HAVO, KALA, KAHO, NPSA, WAPA)

² 4-digit sampling year

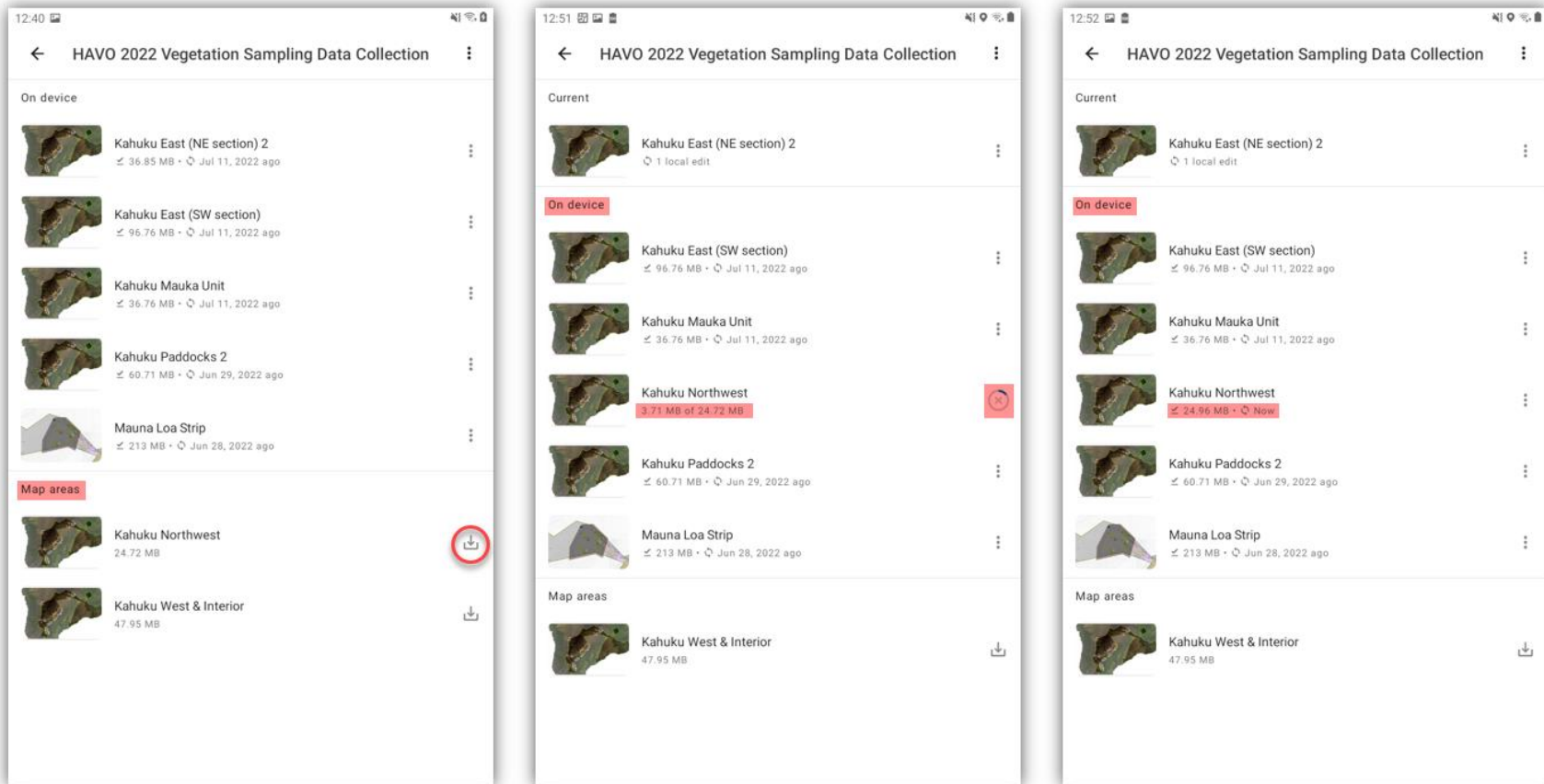


Figure SOP 8.3. Steps for downloading a map for offline use that has predefined offline areas.

If there are no offline map areas predefined:

- a. Tap the Kebab Menu (three vertical dots) to the right of the desired map name on the map list screen. From the expanded menu tap “Add offline area”.
- b. Pan and zoom to the area on the map you would like to take offline. The extent of the offline area is indicated by a box overlayed on the map, and the maximum size of that area is determined by the level of detail selected. Below the name of the area that you will take offline (Area 1, etc.), select the level of detail (displayed as either a map scale or references – room, building, area, etc.). Bigger areas and a finer level of detail (small second number on map scale) will take longer to take offline since more information is being downloaded. The recommended level of detail is Buildings. When the area and the level of detail is set satisfactorily, tap the blue *Download Area* button at the bottom of the screen.
- c. The map area will start to download, with progress indicated next to the map area (when the map starts to download you are taken back out of the map to a page that lists the offline areas for the map). *The download may take several minutes or more.*
- d. Once the download is complete, the downloaded map area will appear in the list of map areas that fall under the header *On Device*. The Field Maps home page with the list of maps will also indicate which maps have offline areas stored on the device.
- e. The device and map are now prepared for offline data collection in the field.
- f. Once the map is offline (on device) and ready for use, is it recommended you set the device to airplane mode before leaving for the field.

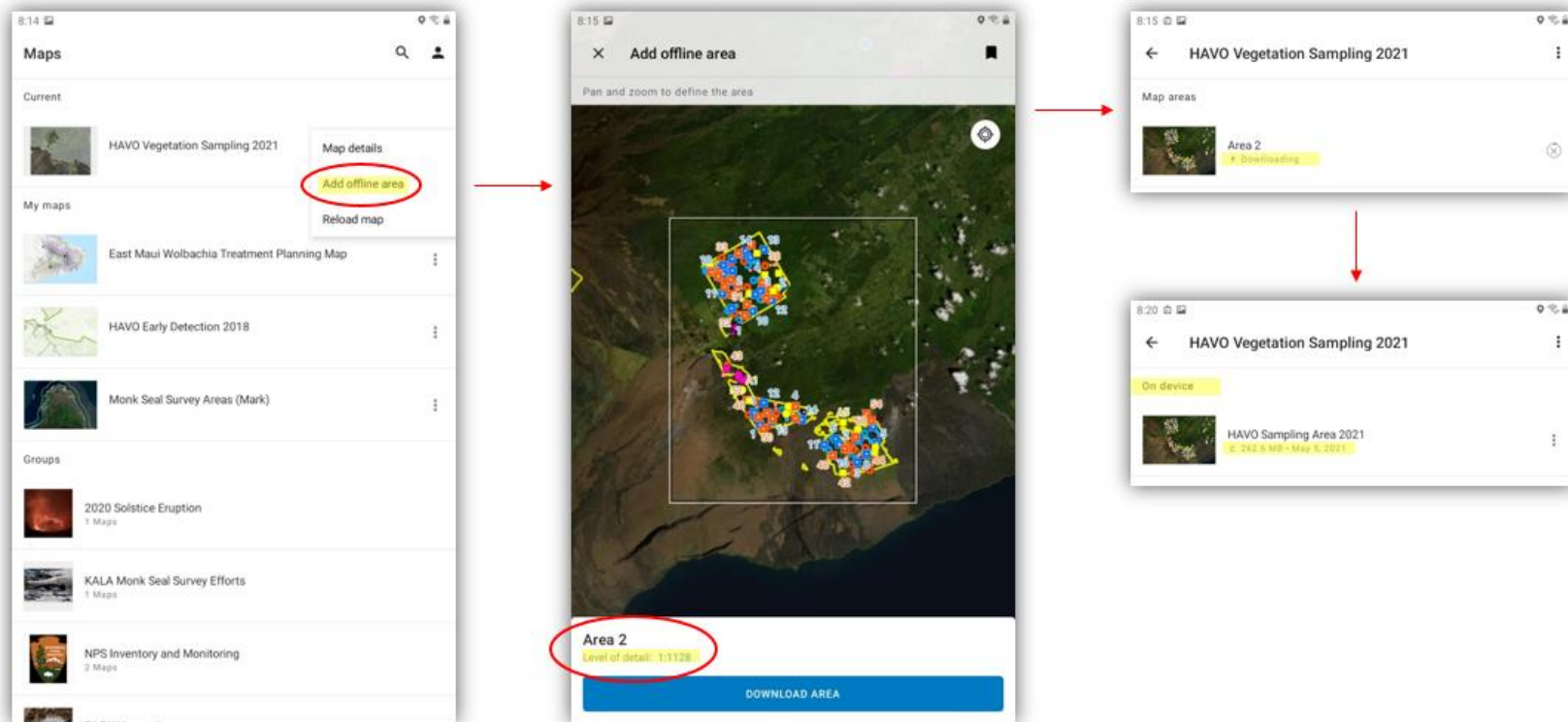



Figure SOP 8.4. Steps for downloading a map for offline use that has no predefined offline areas.


Field Maps Field Procedures

Data Collection

Two types of data are collected for the FTPC and EIPS protocols within Field Maps – GPS points + plot photos as dictated by the protocol, and unknown plant photos (the GPS points + transect photos for EIPS protocol will also appear as a data collection option within the same Field Maps map). See [Appendix SOP 8.b](#) for a list of attribute fields for each data layer.

1. To initiate collection of a point, tap the blue button with a plus sign in the lower right-hand corner of the map (Figure SOP 8.5, left).

Note: *The Field Maps map is, by default, centered on the user's current location, indicated by this symbol . A user can pan to different areas of the map by swiping. If the map has been panned before data collection, Field Maps will place the point at the location panned to on the map and indicate by a circle with crosshairs. Before collecting data (assuming it is desired the point is collected at your current location), pan the map back to your current*

location by tapping the crosshairs symbol in the upper right corner of the map .

2. After tapping the collect data button (Step 1), a list of data types / feature classes for which collection is enabled will appear. Tap the desired layer. Layers are named *FTPC Points & Photos*, *EIPS Points & Photos*, or *Plant Photos*, preceded by the park code and year. Tap the desired layer for which you would like to collect a point (Figure SOP 8.5, right).

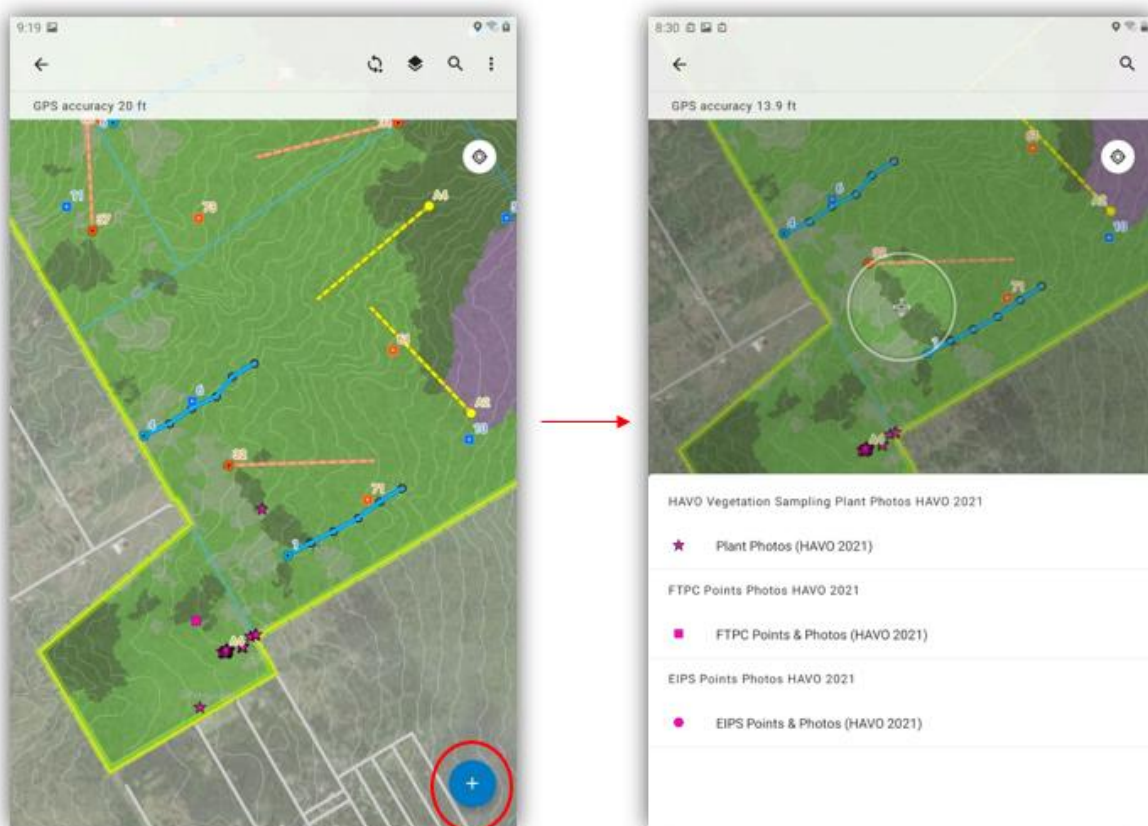


Figure SOP 8.5. Adding a point (left) and viewing the feature classes for a which a data point can be added (right).

3. The data collection interface is now active. The header of the app window will change to display **X Collect ✓**. A new point for the selected layer will appear on the map, and a window will pop-up at the bottom half of the Field Maps interface with attribute data for the point. That window will display the point name (auto-populated based on attribute field entries), point location, show three buttons, and then the data attribute fields below (Figure SOP 8.6).
 - a. Tap the *Take Photo* button, this will activate the device camera. Take photo and tap OK if satisfactory. Repeat as necessary for data types with multiple photos per point (plant photos).
 - b. Populate the attribute fields for the data point. To populate a field, tap on it. If the field has a domain (predetermined list of acceptable values), a pick list will appear. Select from that list. If the field accepts typed text, a keyboard will pop up. Populate text as desired.
 - i. For attribute fields with long pick lists, the list may be search by typing in text in the space at the top of the list. Tap the open area at the top of the list

to activate the keyboard and start typing. The list will be filtered to the values containing the text you have typed. Select a value as desired.

- c. If desired (i.e., if GPS accuracy improves while populating data fields), you may update the spatial location of the point. To do this, from the data collection interface, pan the map frame until the white cross within the white circle outline in the center of the map frame is over the desired location. Then tap the *Update Point* button.
- d. When all attributes fields for the point are populated as desired, photo(s) are taken, and point location is satisfactory, tap the check mark in the upper right corner to collect the point.
- e. A window will pop-up with a spinning circle and the text *Submitting....* This should take just a moment. Once the point has been collected, you will be taken back to the main map interface.

The figure consists of two side-by-side screenshots of a mobile application interface titled 'Collect'. The left screenshot shows a map with a white circle and a crosshair. Below the map is a form with the following fields: 'Plant Photo:' (with coordinates 19.464234°N 155.243942°W), 'UPDATE POINT' (a blue button), 'TAKE PHOTO', and 'ATTACH'. Below these are three more fields: 'Sampling Frame', 'Location Comment' (with 'N/A'), and 'Collector'. A red box highlights the bottom three fields. A red arrow points from the 'UPDATE POINT' button to the right screenshot. The right screenshot shows the same form, but the 'UPDATE POINT' button is now disabled. The 'Plant Photo' field is now 'Plant Photo: Metrosideros polymorpha (METPOL1) Myrtaceae ; 'ohi'a / Tr...'. The 'Sampling Frame' field is 'Ola'a'. The 'Location Comment' field is 'Misc / Other'. The 'Collector' field is 'Mark Wasser'. The 'Taken (plant photo)' field is 'Metrosideros polymorpha (METPOL1) Myrtaceae ; 'ohi'a / Tree / Native'. The 'Taken relation' field is '5 (species confirmed)'. The 'Taken Comment' field is 'variety glaberrima'. The 'Specimen?' field is 'No'. The 'Unit Code' field is 'Hawaii Volcanoes National Park'. The 'Sampling Year' field is '2021'. The 'Community' field is 'M...'. A red checkmark in a circle is in the top right corner.

Figure SOP 8.6. Populating and submitting the attribute fields for the added data point.

Post-Field Office Tasks

Data Synchronization / Upload

Data collected in offline mode in a disconnected environment is stored locally on the mobile device and must be uploaded (synced) to ArcGIS® Online once back in a connected environment.

1. All offline maps which data has been collected in must be synced. This must be done in a connected environment, either via Wi-Fi or a direct USB/Ethernet connection to the NPS Network.
2. Any offline maps with data collected will display text in the map information area saying **XX local edit(s)**.
3. To sync collected data, tap the kebab menu to the right of the map, and select *Sync* (Figure SOP 8.7).
 - a. The area below the offline map name will show **Syncing**, and a progress indicator will appear in place of the kebab menu. *Syncing may take up to 15-20 minutes.*
 - b. Once syncing is complete, the kebab menu will reappear to the right hand side, and text below the offline map area name will again indicate the size of the offline area and the date of the most recent sync (if less than one day has passed, the time since sync will be displayed – e.g., **One hour ago**).

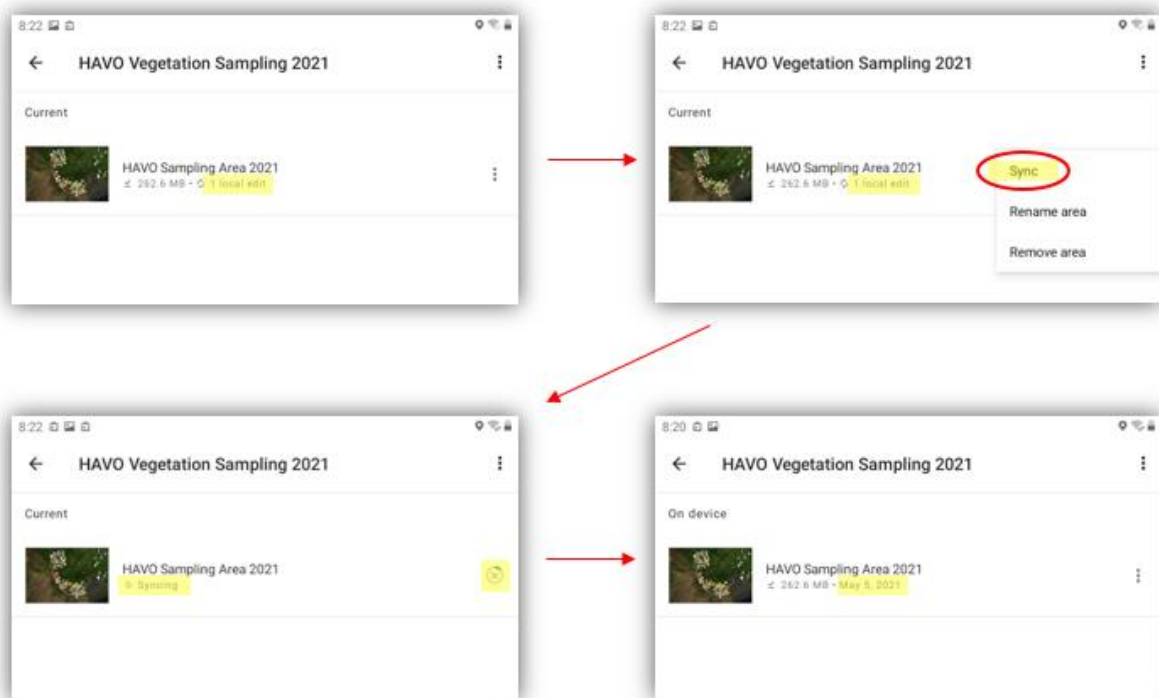


Figure SOP 8.7. Steps for syncing data that was collected while offline to ArcGIS® online for preservation.

- c. If sync fails, retry. If several sync attempts fail, please contact the PACN GIS Specialist for troubleshooting advice.
4. Ideally, data is synced at the end of each field day once back in the office. At minimum, all devices with data collected should be synced once weekly.

Other Data Collection Tips and Resources

Instructions and screen shots provided are for/from a tablet running Android OS, some small differences exist when using the App between phones and tablets, and Android and iOS devices. Many steps in this guide must be completed in a connected environment (wi-fi or cellular).

ESRI Produced Quick Reference Guides for Field Maps are available here:

[Android Phone](#)

[Android Tablet](#)

[iPad](#)

[iPhone](#)

Appendix SOP 8.a. Basic Field Maps Functions and Interface

National Park Service
U.S. Department of the Interior



Pacific Island Network

Basic Map Functions

Note: The screen shots displayed are from Collector, but all applicable functions identified in this figure remain in the same location with the same function for Field Maps. There has been a Sync button added to the left of the Layers Menu for Field Maps, but this functionality should not be utilized by PACN Staff from within the data collection frame.

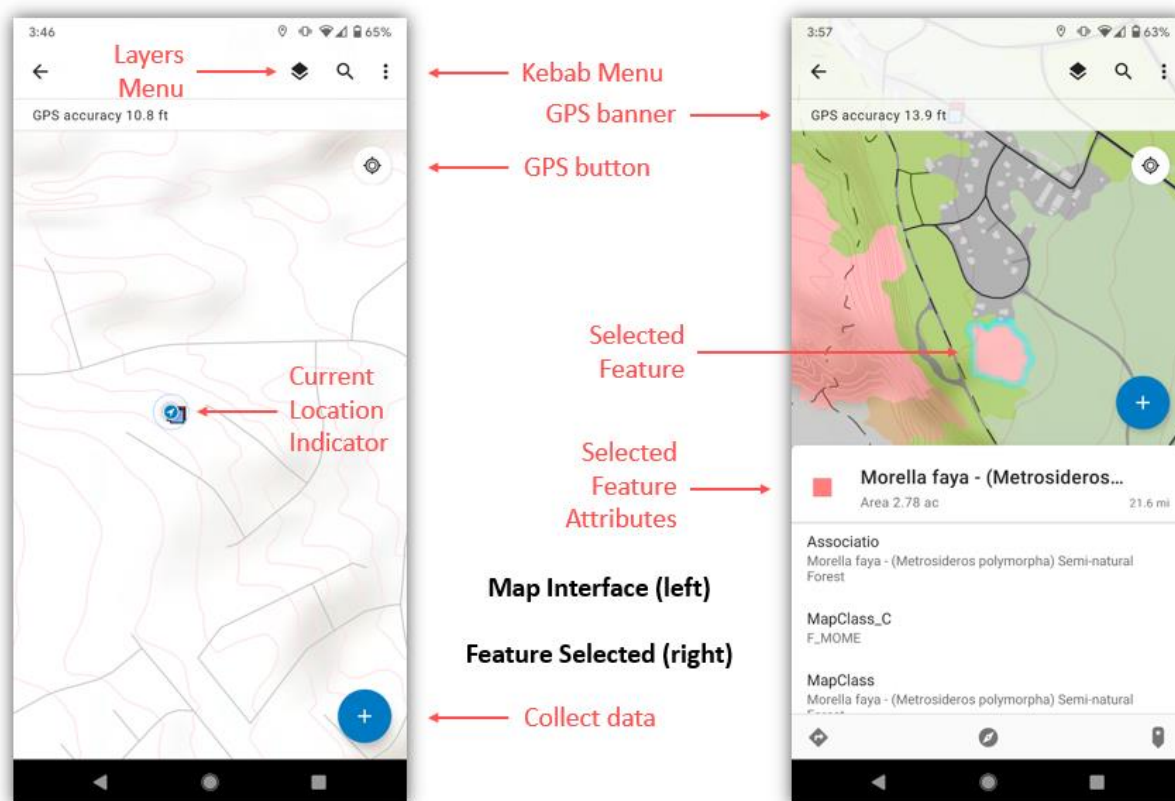


Figure SOP 8.a.1. Screen captures of the map interface (left) and feature selected interface (right) in Collector.

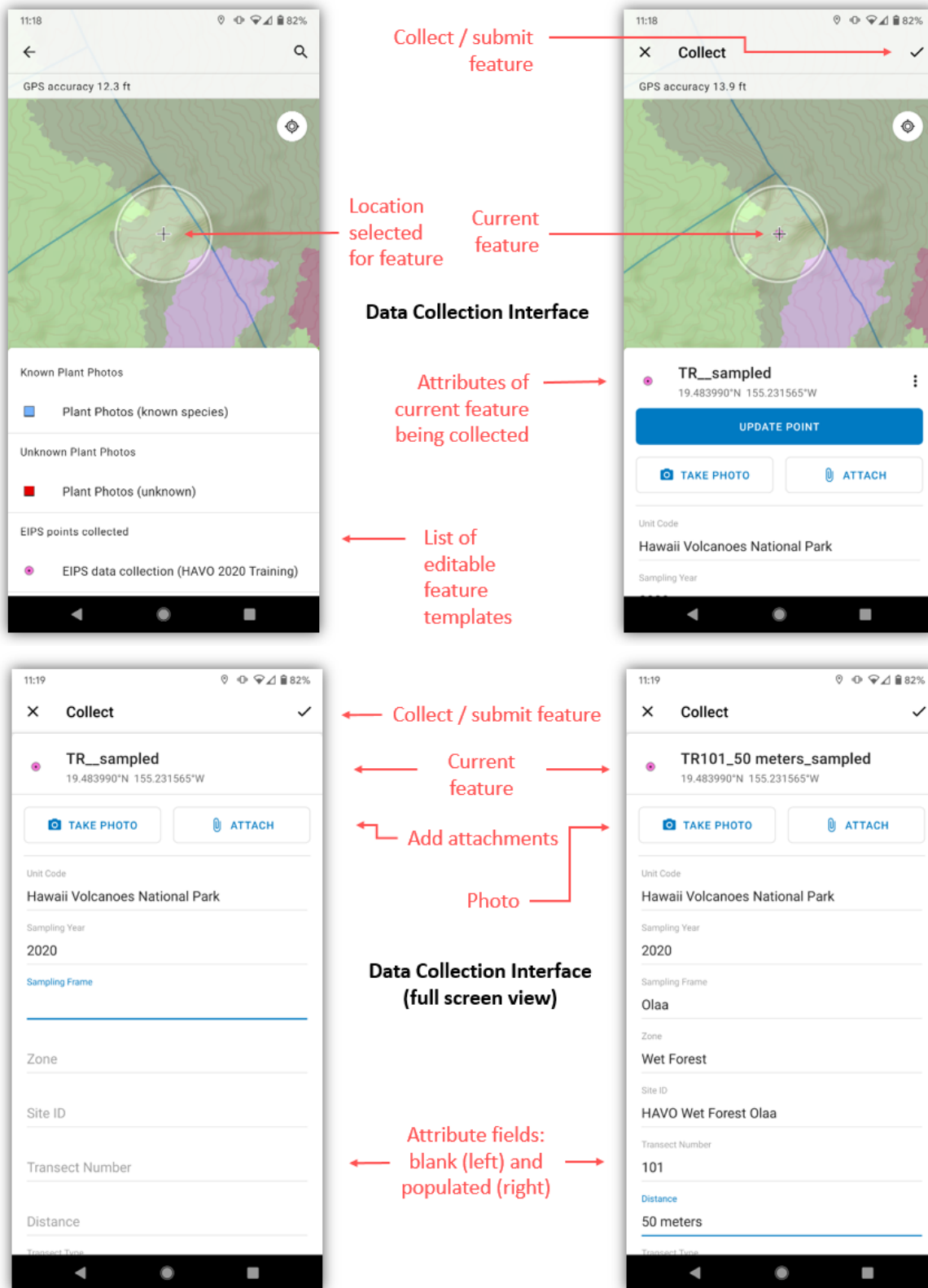


Figure SOP 8.a.2. Screen captures of data collection interface (top) and the full screen viewing mode (bottom) in Collector.

Appendix SOP 8.b. Attribute Fields for FTPC & EIPS Data Layers

National Park Service
U.S. Department of the Interior



Pacific Island Network

FTPC Points & Photos

Table SOP 8.b.1. Attributes in Field Maps for FTPC points and photos.

<u>Attribute Field</u>	<u>Data Type</u>	<u>Collection Method</u>
Sampling Frame	Text	Pick List
Plot (Location)	Text	Pick List
FTPC Subject	Text	Pick List
Other Subject	Text	Type In Text
Data Collector	Text	Pick List
Comment	Text	Type In Text
created_user	Text	Auto-populated
created_date	Date	Auto-populated
Unit Code	Text	Auto-populated
Sampling Year	Short Integer	Auto-populated
Community	Text	Auto-populated
Latitude	Double	Auto-populated
Longitude	Double	Auto-populated

EIPS Points & Photos

Table SOP 8.b.2. Attributes in Field Maps for EIPS point and photos.

<u>Attribute Field</u>	<u>Data Type</u>	<u>Collection Method</u>
Sampling Frame	Text	Pick List
Transect (Location)	Text	Pick List
EIPS Subject	Text	Pick List
Other Subject	Text	Type In Text
Data Collector	Text	Pick List
Comment	Text	Type In Text
created_user	Text	Auto-populated
created_date	Date	Auto-populated
Unit Code	Text	Auto-populated
Sampling Year	Short Integer	Auto-populated
Community	Text	Auto-populated
Latitude	Double	Auto-populated
Longitude	Double	Auto-populated

HAVO Vegetation Sampling Plant Points & Photos

Table SOP 8.b.3. Attributes in Field Maps for HAVO vegetation sampling plant points and photos.

<u>Attribute Field</u>	<u>Data Type</u>	<u>Collection Method</u>
Sampling Frame	Text	Pick List
Location Comment	Text	Type In Text
Data Collector	Text	Pick List
Field ID (Taxon)	Text	Pick List
Field Taxon Relate	Text	Pick List
Field Taxon Comment	Text	Type In Text
Specimen	Text	Pick List
created_user	Text	Auto-populated
created_date	Date	Auto-populated
last_edited_user	Text	Auto-populated
last_edited_date	Date	Auto-populated
Unit Code	Text	Auto-populated
Sampling Year	Short Integer	Auto-populated
Community	Text	Auto-populated
Latitude	Double	Auto-populated
Longitude	Double	Auto-populated
Final ID	Text	Pick List
Final ID Taxon Relate	Text	Pick List