

ArcGIS Collector Tutorial

Using ArcGIS Collector for MEDN POE Weed Surveys (v2020.1)

This tutorial is intended for data collection for the NPS Mediterranean Coast Inventory and Monitoring Network's Invasive Plant Monitoring Program using an iPad and ArcGIS Collector. The application is set up to conform to NISIMS standards for ease of use and reporting. To use Collector for ArcGIS Online app, you must have an ArcGIS Online account. See a supervisor for account access. The ArcGIS online project administrator will have to make sure that the account you use has shared privileges to access the Collector project. The Collector app will allow you to use your iPad in the absence of an internet connection. After you return from the field and connect to the local network, you can easily sync your data.

1) Downloading a Map Extent for the First Time

- To download maps on to your iPad, you will need to have a Wi-Fi connection. When connected, turn on your iPad, and launch the Collector app.
- Select the “Sign In with ArcGIS Enterprise” option.
- If you need to enter the URL, enter “nps.maps.arcgis.com”.
- Select the “Enterprise login: National Park Service” button.
- Log on to Collector using Mark Mendelsohn's (Botanist) or Joey Algiers' (Restoration Ecologist) account.
- The default home screen will be the “Maps” window.
 - All the maps created by this account, or shared with this account, will appear on this “Maps” window.
 - Click into the “SAMO Staff” folder under “Groups”.
- Find the “MEDN_InvasivePlantsMonitoring_POE_v2019b_WebMap” map.
 - Tap on the three dots along the right edge of that box.
 - Select “Add Offline Area”.
 - A map with all of the POEs should appear. Pan and zoom to the area on the map with the POE that you would like to download. Be sure that the map area has a high enough resolution (“Room” level is default and that works well for our applications) that it will be useful to recognize landmarks in the field (e.g., trees, rock formations, etc.).
 - Some, but not all of the POEs will have polygons outlining Zone 1 and Zone 2. If there is no polygon, be sure to download a large enough map area to be able to collect data throughout the entire POE.

- Tap on the Download Area button at the bottom of the map.
 - Once the map has downloaded, you will automatically be redirected to the “MEDN_InvasivePlantsMonitoring_POE_v2019b_WebMap” page showing maps “On Device”.
- The map that was just downloaded will be labeled “Area X”, X being a number corresponding to the number of previously downloaded maps. The number is irrelevant because the next step will be to label the map with a more useful title.
 - To change the title of the map, tap on the three dots on the right of the map.
 - Choose “Rename Area” and change the name of the map to POE-XXX and include a name for the general area where the POE is located, XXX being the three digit number to identify the POE (e.g., POE-078 Rocky Oaks).
- Once these steps have been completed, the map is ready to be taken into the field.
- Repeat the above steps for each POE that you plan to complete in the field that day by clicking on the three dots in the upper right of the “On Device” page and then “Add Offline Area”.
- Note: you won’t be able to view the whole map again until you remove all offline areas (see section IV below), or you can get a view of the whole map (but not manipulate it) in the Add Offline Area box.

II) Collecting Data with the ArcGIS Collector App

Once you have downloaded your background map, you will be ready to go out in the field and collect data.

There are various ways of collecting data. You can use the GPS receiver to track your movement to collect data, or you can draw features with your finger directly on the screen. If the landmarks on your basemap are clear, you may be able to draw the features directly on your map, but you should rely on the GPS receiver for better accuracy. Landmarks may not always be clear when working in the field.

For better accuracy (or for Collector to allow you to add any line features at all, if your iPad does not have an internal GPS), you will need to partner your iPad with the Bad Elf GPS Pro or Garmin GLO wireless GPS receiver. First, make sure your GPS receiver is fully charged (see manufacturer’s user manual for instructions on charging). Then simply turn on the GPS receiver, navigate to “Settings” on your iPad, and make sure that your Bluetooth receiver is On. Your iPad will be able to see the GPS receiver. Confirm the connection.

- Once you have established a Bluetooth connection with the GPS receiver and selected your desired map (where you are located) to open it, you are now ready to start collecting data.

- The data collection toolbar is not immediately visible from your map. To expand it, click on the blue “+” icon in the bottom right corner. Tap on “Cancel” in the upper left of the screen to hide the toolbar. Click the “+” to expand your toolbar.
 - In your toolbar, you will have the option to collect a line (WeedSurveyLn) or point (WeedSurveyPt) feature.
 - For the most part, data collection is the same for all features. Lines are composed of multiple connected points/vertices. A point feature is simply a single vertex.
- **Collecting a Line Feature:** To collect a line feature, click on the “WeedSurveyLn” feature from the toolbar.
 - The first vertex of the line will be generated at a point determined by your GPS unit. If you wish to change the starting location of your line, move the crosshair around the map to where you want to start your line, tap on the three dots at the top right side of the WeedSurveyLn tab, and select Update Selected Point (you could also choose Delete Selected Point, if needed).
 - If you wish to collect the data by walking along the infestation with the GPS and iPad, tap on the three dots at the top right side of the WeedSurveyLn tab, and select “Start Streaming”. This option will add points at designated intervals for the entire duration of streaming.
 - To change the rate at which points are collected, select the three dots at the top right side of the WeedSurveyLn tab, and select “Streaming Interval”. The option to edit the interval based on time or distance will appear. Edit accordingly.
 - To end streaming, tap on the button that says “Stop Streaming”.
 - To generate a line by selecting points on the map, move the crosshairs to the point on the map where you wish to start your line, select the “Add Point” button. Move the crosshairs to the next spot on the map where you would like to add a point and again select the “Add Point” button and so on, until you have a line representing the data.
 - The most recent point that was added is indicated by a white dot, whereas the others are red. If you need to delete the most recently added point, tap on the three dots at the top right side of the WeedSurveyLn tab and select “Delete Selected Point”.
 - If you want to move the most recently added point to a different location, move the crosshairs to the desired location, tap on the three dots at the top right side of the WeedSurveyLn tab and select “Update Selected Point”.
 - To select a point along a line, tap it so that the dot turns from red to white, indicating that the selected point has changed from the most recently added to the point that you chose. From here, you are able to edit the point in a manner similar to what is described above.
- When you have delineated your line, go ahead and edit the attributes. When you start creating a new feature, you will see all of the associated attributes in the table below the map view.

- Tap on any attribute to activate and populate it.
 - You will notice that some attributes are dropdowns, and some attributes are text boxes. This depends on the attribute. For example, the scientific code name is a dropdown menu that includes all target species being considered for the network. *Each park should know which species are being targeted for their weed inventory and monitoring program.*
 - With few exceptions, the attributes conform to the NISIMS database standards. The features at the end of the list with the “MEDN_” prefix are I&M project specific attributes that will be removed before submitting to NISIMS by an administrator.
 - The “Buffer Direction” attribute is critical for collecting line feature data. Your options in the dropdown for this attribute will include right side, left side, or both sides. Line features automatically include a direction attribute. If your line runs from south to north, the east direction will be the right side, and the west direction will be the left side. Conversely, if your line runs from north to south, the east side will be the left side, and the west side will be the right side. Keep direction in mind as you are collecting line features.
- Make sure to enter all required fields.
 - **Weed Survey Begin Date (REQUIRED):** survey begin date
 - **Survey End Date:** survey completion date; only required if different than begin date
 - **Survey Method / WSA_TY_NM (ignore):** survey method used to search for invasive species (select Observed, if anything)
 - **Team Code (REQUIRED):** team that conducted the survey (select California EPMT)
 - **Park Unit Code (REQUIRED):** park unit code where the data were collected (select Santa Monica Mountains National Recreation Area or Channel Islands National Park)
 - **Recorder Name (REQUIRED):** person recording the data (enter LastName_First Name; enter multiple names, separated by comma or semi-colon, if applicable)
 - **Scientific Code Name (REQUIRED):** species being surveyed (select from the dropdown list); select additional species in fields SCNTFC_CD2, 3, etc., if more than one species will share this record, i.e., they share the same area/s on the ground
 - **Desired Plant Community Status Description / DPC_TX (ignore):** description of the status of the desired plant community
 - **Total Person Hours:** total number of person hours expended during the survey
 - **Notes:** additional comments and notes

- **Buffer Distance in meters (REQUIRED):** distance that the individual/cluster/stand extends out from the line/point mapped; for point features, the default is 0.01, which indicates a single individual
- **Buffer Direction (REQUIRED for line features):** the direction from the line in which the individual/cluster/stand occurs
- **Loc_NM (REQUIRED):** enter the POE number in one of these exact formats -- for SAMO: POE-XXX, e.g., POE-078; for CHIS: CHIS-XX, e.g., CHIS-04
- **MEDN_Distribution (REQUIRED):** select the distribution pattern (see SOP 6; Irvine et al. 2016)
- **GlobalID (*ignore*)**
- **MEDN_Zone (REQUIRED):** select Zone 1 (hardscape & 50 m up trail/s), Zone 2 (+m buffer), or Both
- **MEDN_Density (REQUIRED):** select the number of plants observed (<10, 10–100, >100)
- **Each of the following 3 fields is REQUIRED only for the first feature (point or line) recorded for the POE:**
 - **Most Abundant Vegetation Community Type:** select one of the choices to characterize the majority of the area (if “other”, describe in Notes field)
 - **Vegetation Status:** select one of the choices to characterize the majority of the area
 - **Burned in Recent Fire?:** select one of the choices, if relevant this year
- When you have finished delineating your feature and entering the attributes, click on “Submit” at the top-right of your screen.
- **Collecting Point Features:** The principle for collecting point features is the same as that for collecting line features. You can draw the feature with your finger directly on the screen, or you can use the blue “+” icon to mark a vertex on your current location as determined by the GPS receiver.
- **Deleting or Editing an Existing Feature:** Features can be edited or deleted after they have been created. To target a specific feature, simply click on it. This will open the feature’s details on the left side of the screen.
- At the bottom of the feature details, you will find the following options:
 - **Edit:** This option will let you add or remove vertices from an already created feature or edit any of the attributes.
 - **Copy:** This option will create a copy of the selected feature. The original and the resulting feature will share the same table attributes and spatial attributes (and can then be edited as needed).

- **Delete:** This option will delete the selected feature.
- **If no target nonnative species are found within the POE,** you must still enter one feature (e.g., a point in the approximate center of the hardscape), and 1) fill out the required fields, 2) select “No target species found” under Scientific Code Name, and 3) fill out the following fields: Most Abundant Vegetation Community Type, Vegetation Status, and Burned in Recent Fire.

III) Syncing Data After Field Work

You should sync your data every time you return from the field. You need to have a Wi-Fi connection in order to sync your data. Sync your data when you return to the office. It is important to sync data, as they will be lost if someone changes the map extent without syncing. The map area that has been edited will have a note under the title stating “X local edits”. X represents the number of collected features that need to be synced.

- To sync, click the three dots on the right side of the map that you have been working on, and select sync.
 - Once the data have been synced, the note under the title will change to “synced X minutes ago”.

IV) Removing No Longer Needed Maps

After syncing your data and ensuring that you no longer need an offline map, you should delete the map to clear up storage space on the iPad.

- From the “MEDN_POE_Weeds_Database_2019” page, tap on the three dots next to the name of the map that you no longer need.
- Select “Remove Area” and confirm by clicking on “Remove” (otherwise “Cancel”).