

# TwoTrails Android



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# Table of Contents

General Android Navigation and Information .....	0
Connecting an External Device .....	1
Configuring for an External GPS.....	3
Creating a new Project .....	4
Metadata .....	5
Creating, Editing and Deleting Metadata .....	5
Polygons.....	6
Creating and Editing a Polygon .....	6
Deleting a Polygon .....	6
Points .....	7
Creating Points .....	7
Editing Points.....	7
Deleting and Resetting a Point .....	8
Point Types .....	9
GPS and Way Points .....	9
<i>Setting up a GPS Point</i> .....	9
<i>Acquiring GPS Data</i> .....	9
Traverse and Sideshots .....	11
<i>Creating a Traverse/Sideshot</i> .....	11
Quondam Points.....	12
<i>Creating a Quondam</i> .....	12
Take 5 Method .....	13
Taking a T5 Point .....	13
Taking a Sideshot.....	13
Walk Method (Bread Crumb).....	15
Table View .....	16
How am I Doing? (HAID) .....	17
Plot Grid.....	18
Export.....	19
Map.....	20
Where Is & Point to Point Navigation .....	22
Changing the Map Type .....	23

<b>Map Manager</b> .....	24
<b>Adding an Offline Map from a File</b> .....	25
<b>Creating an Offline Map from an Online Map</b> .....	26
<b>Adding an Online Map</b> .....	27
<b>GPS Logger</b> .....	28
<b>Media</b> .....	29
<b>View and Edit Point Media</b> .....	29
<b>Adding Media</b> .....	30
<b>Capturing Media</b> .....	31
<b>Help</b> .....	32

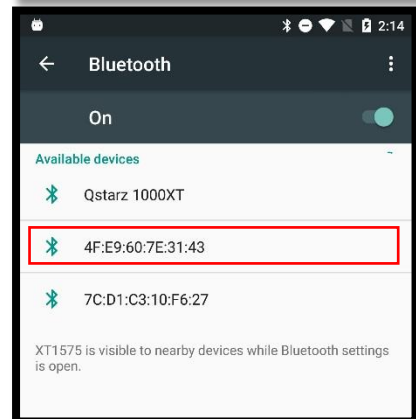
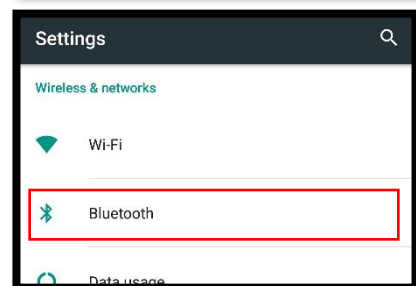
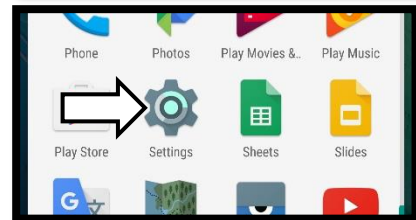
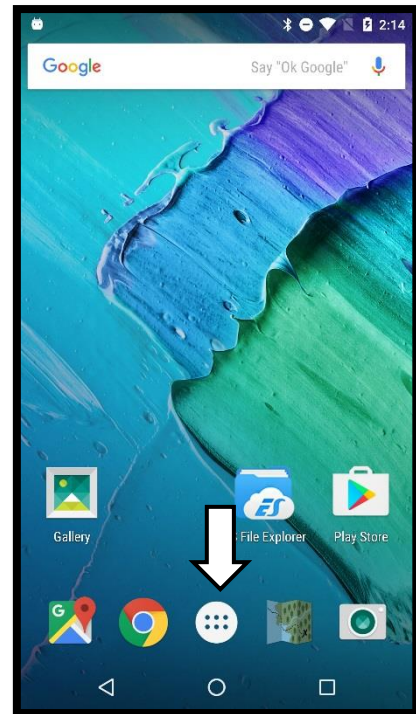
## General Android Navigation and Information

- **Menus-** To display a menu there is icons (usually displayed as 3 vertical dots) located on the left side of items or in the top right of the screen.
- **Tabbed / Sliding Navigation-** In areas with tabs you can navigate to each section by either clicking on the tab or by sliding your finger in a horizontal direction across the screen. In the Metadata, Point and Polygon forms you can go between items using the slide method as there are no tabs.
- **Navigation Panels-** Navigation panels are available in some forms like the Map and Take5. To access this panel swipe your finger from the left side of the screen to the center.
- **Back Navigation-** To go to a previous screen you can always press the Android system's back button displayed either as a back arrow or triangle, on the bottom or below your screen. Another option on most screens (usually screens without navigation panels) you can press the back arrow located on the top left side of the screen.
- **Multiple action items-** Buttons sometimes do more than one thing. Buttons that add items such as Adding a Point can be 'long pressed' (holding the button down instead of clicking it) to show menus. Other items when held down may display information such as buttons where there is an icon instead of text.
- **Pull-Up Bars-** Some items can be pulled up to show more information. In areas like the Point Form you can pull the bar up at the bottom of the screen to show media.

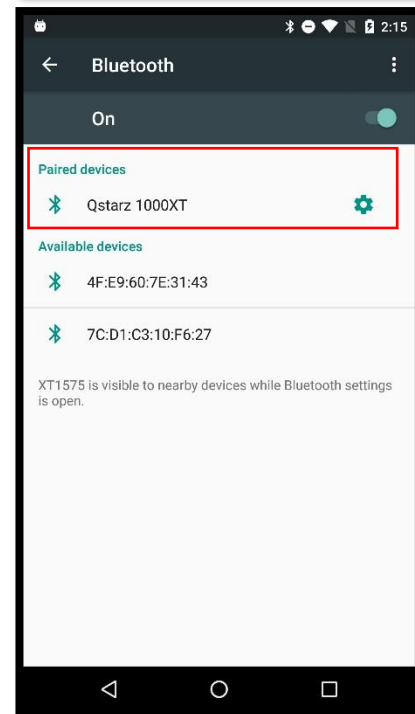
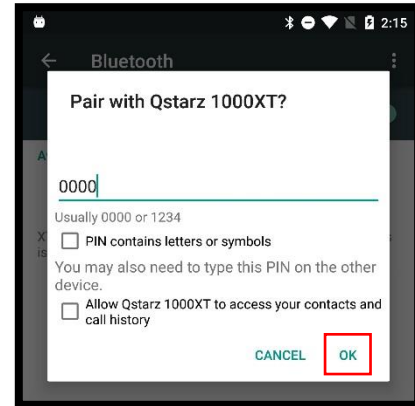
## Connecting an External Device

Notice: Connecting an external device may be slightly different for each type of android device. This Guide uses a MOTO X Pure and a QSTARZ XT GPS. Your settings, buttons and application drawer may look different and in some cases connecting may have fewer or less steps.

1. From the main screen click the application drawer and select settings.
2. Select Settings from the application drawer.
3. Select Bluetooth from Settings.
4. Select your GPS-receiver from Available Devices in the Bluetooth page. (Make sure your device is turned on and is in pairing mode. This differs between devices. In the case of the QSTARZ it means turn the device to Navigation Mode, and holding the red button until you hear a beep and the Bluetooth icon flashes)

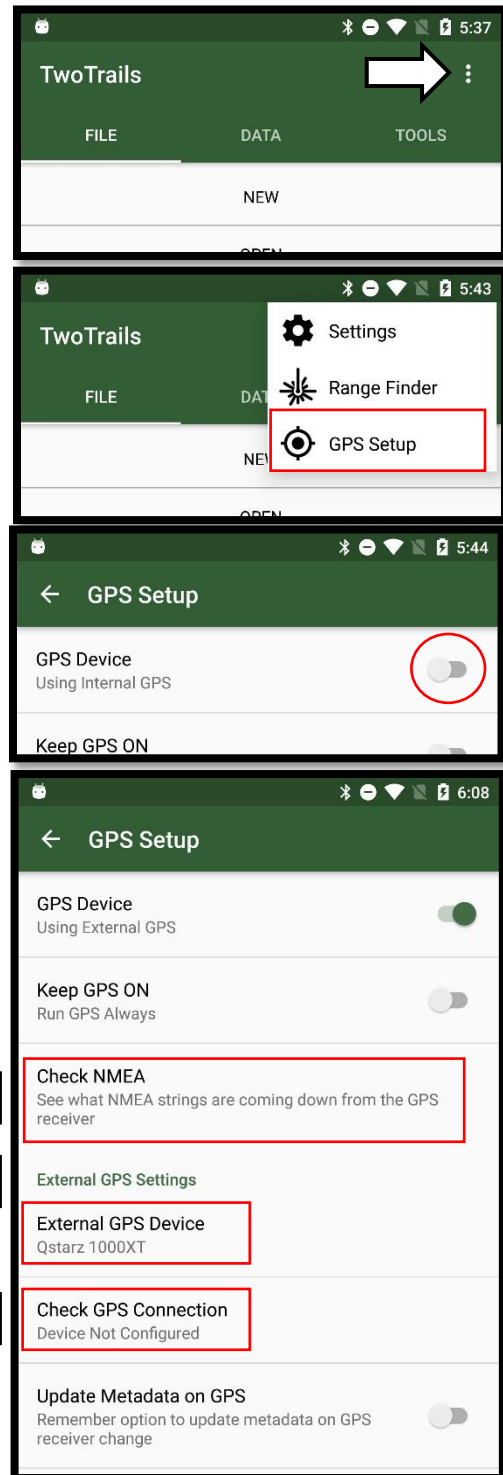


5. Enter the code needed to connect to the GPS-reciever and press OK. (The QSTARZ XT has a code of 0000)
6. You device should now appear under the Paired devices section.
7. You are now ready to configure your GPS-reciever to TwoTrails.



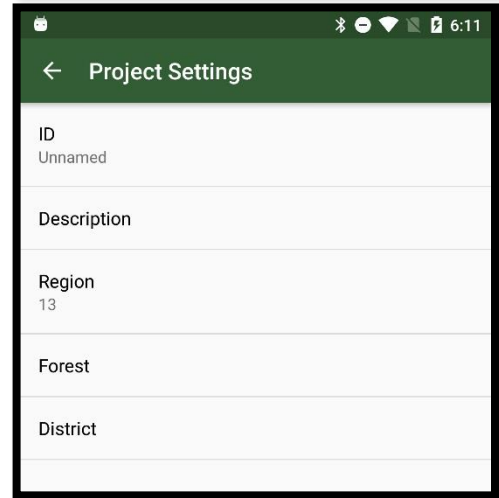
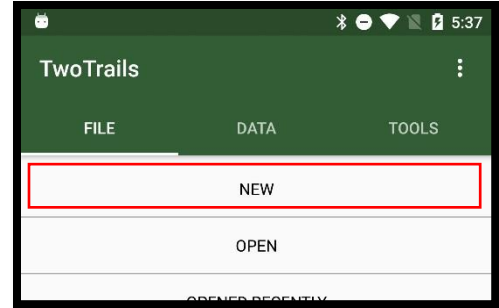
## Configuring for an External GPS

1. In the top right corner of TwoTrails click on the menu symbol (3 vertical dots) and then select GPS Setup.
2. Switch the GPS Device from Internal to External. This will make the External GPS Settings become available below.
3. Select **External GPS Device** and select from one of the connected Bluetooth devices. (If your GPS is not listed you need to connect it via Bluetooth. See *Connecting an External Device: pg 1*)
4. Click **Check GPS Connection**. This may take a minute to connect depending on the device. Once connected you may see a screen asking if you want to change your receiver in the metadata to the GPS-receiver that has been connected.
5. Now to determine if the GPS is working click on **Check NMEA**. The GPS is working if you can see RMC, GGA, GSA, and GSV. (It may take up to a minute to see all the types) If you see all 4 types, you are now ready to collect points.



## Creating a new Project

1. Click **NEW** under the FILE tab, enter the name of the new file and select **CREATE**. (Your project will be saved to the TwoTrails folder inside of the Documents folder on the root of your Device/SD Card)
2. In the Project Information fill out the name of your project as well as the other information that is needed. (By default the name of your project is 'Unnamed')

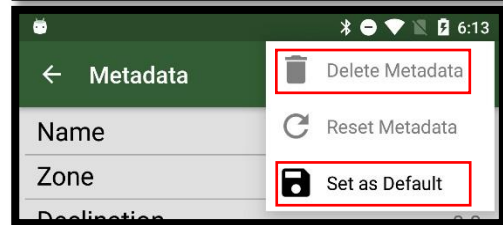




# Metadata

## Creating, Editing and Deleting Metadata

1. Under the DATA Tab click **METADATA EDIT**. Here you will need to configure the metadata to your current region. By default there is one metadata created in the project that cannot be deleted. If desired, the metadata can be renamed.
2. To edit the metadata click on the lock icon at the top of the screen to unlock the metadata. Now you can set the zone you will be working in, the measurement units and the equipment being used. This can be set as a default by clicking **Set as Default** option in the menu.
3. To create an additional metadata press the add icon in the lower right corner of the metadata screen. This may also be deleted later if you wish by pressing the **Delete Metadata** option in the menu.



## Polygons

### Creating and Editing a Polygon

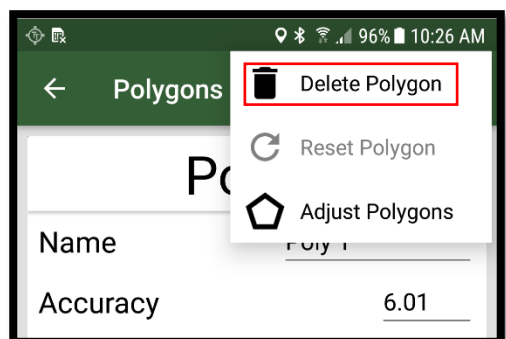
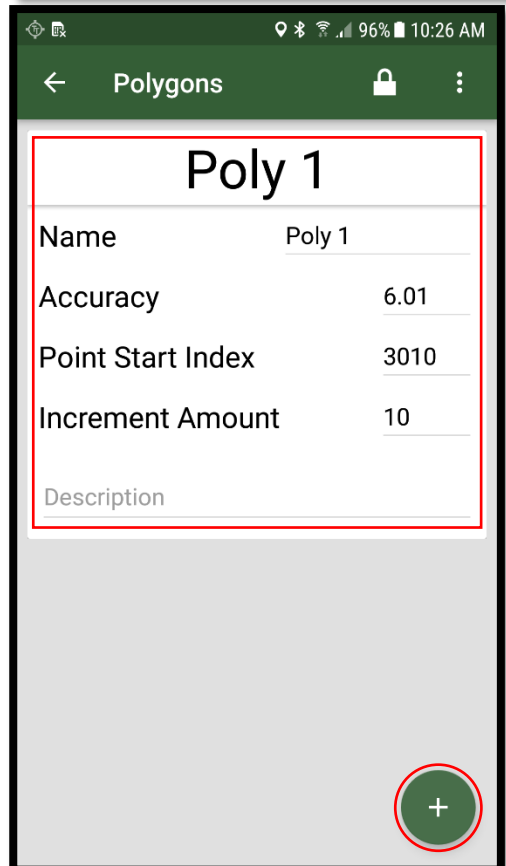
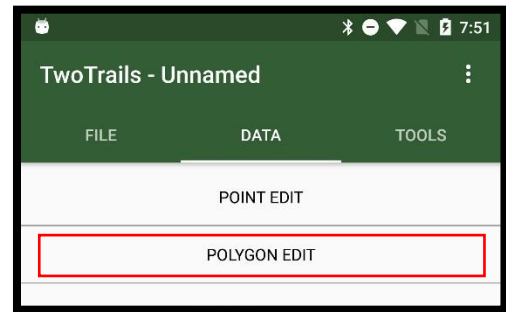
1. Under the DATA Tab click **POLYGON EDIT**. Here you will be able to create and modify polygons.
2. To create a polygon click the add icon located in the bottom right corner of the screen.
- 3.
4. Name the polygon and set its accuracy. Default accuracy for all polygons is 6.01 meters which you should modify (see below). The starting point number and increment amount for the polygon is set, however you can change these values if you wish.

### Deleting a Polygon

1. To delete a polygon unlock it first. Go to the menu and select **Delete Polygon**. (When deleting a polygon all dependent points will be converted into their respected parent points)

### Notes:

- Polygons may be unit boundaries, feature lines or centerlines, or point sets such as grid sample points.
- Measurement error along the boundary such as MTDC accuracy, laser accuracy or digitizing accuracy.



## Points

### Creating Points

1. To create and manage points go to **POINT EDIT** in the DATA tab.
2. Choose the Polygon you are in by clicking the Polygon name in the bar at the top of the screen next to the back arrow.
3. To add a point click the add button on the lower right corner of the screen. By default the last type of point you created will be created. Holding the button down allows you to select the type of point you want to create.

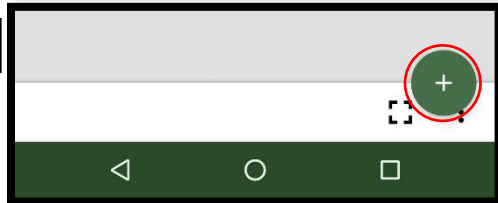
### Editing Points

1. To edit a point you must first unlock it. To do this you must click on the lock icon on the top right corner of the screen next to the menu icon.
2. You can change the point name by clicking the number of the point. A popup will allow you to enter a new number and select a different metadata.
3. To change whether the point is on or off bound toggle the boundary icon located in the header right of the point name. (It is recommended to set a point off boundary versus deleting the point.)

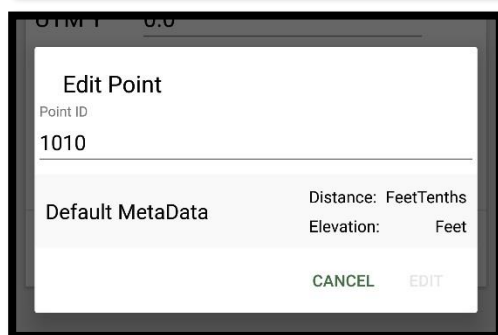
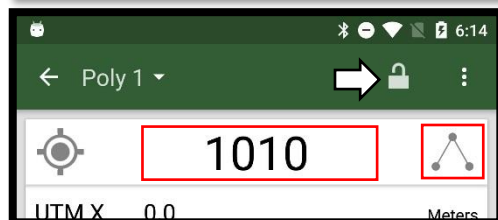
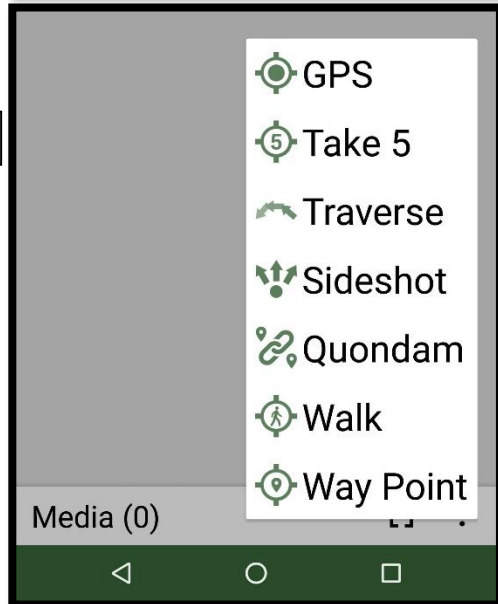
2



3.1



3.2

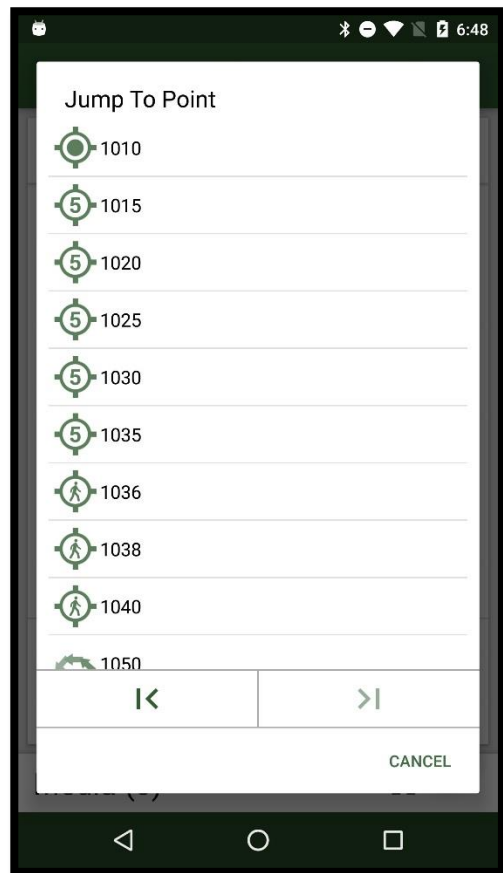
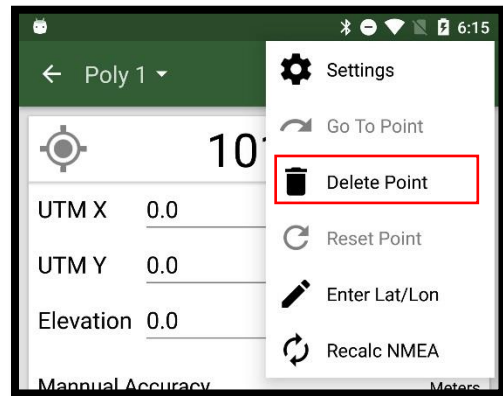


## Deleting and Resetting a Point

1. Rarely needed, you can delete a point by going into the menu and selecting **Delete Point**. (You cannot undo a point delete.)
2. If you have only made an error to a value of your point and want it to reset it select Reset Point. Resetting can only be done while you are still at the point. If you move to another point or leave the point form entirely you will be unable to reset your point.

### Notes:

- You can navigate to other points quicker by going to the menu and selecting **Jump To Point**.
- Some menu options are only available for use under certain situations:
  - GPS Points can use Enter Lat/Lon and Recalc NMEA
  - Delete, Reset and other modifying tools can only be used when the point is unlocked.



# Point Types

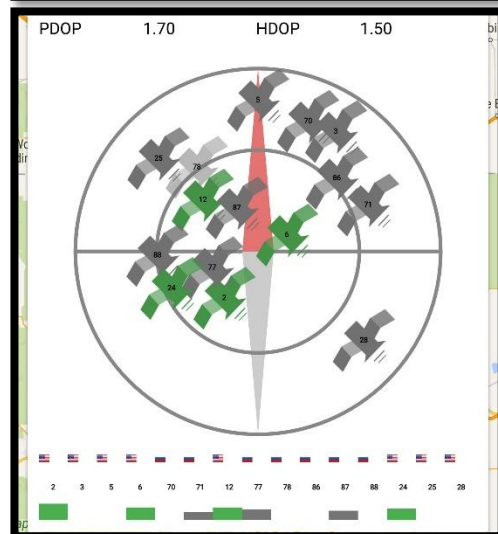
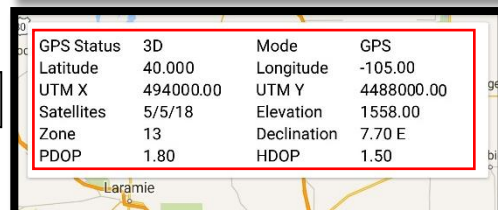
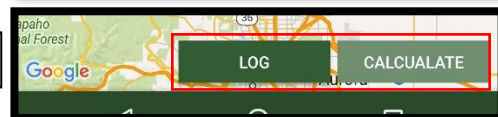
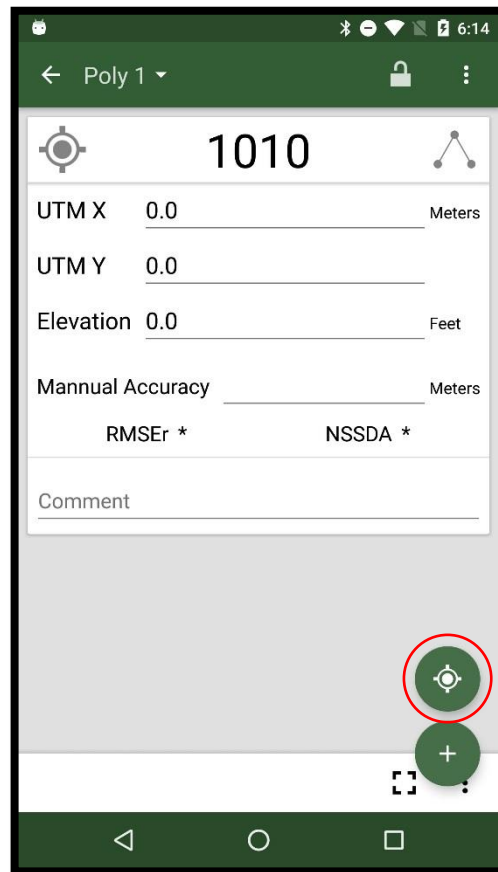
## GPS and Way Points

### *Setting up a GPS Point*

1. Add a GPS Point from the add point button in the lower right of the screen. By default it creates a point with a location of 0, 0.
2. Select the Acquire button located directly above the add point button. (This is only visible when the point is unlocked)

### *Acquiring GPS Data*

3. You are now inside the Acquire form. Here you can collect GPS location data. To start collecting data press the **LOG** button on the bottom of the screen. You can pause and resume logging if need be.



4. To know how valid the data coming from the satellites is you can look at the GPS Info panel located at the top of the screen under the tool bar. For further satellite information you can click on the box to display satellite positions and signal strength.
5. When you are done collecting data press **CALCULATE** to continue to the Point Calculation form.

## Calculating GPS Data

1. In the Calculation Form you can choose how the information you collected is used to create your point. First set the filters in the top box area to exclude points which do not meet your standards.
2. When you done filtering and choosing data you can select **CREATE** to make the GPS Point.

### Notes:

- You can preselect your filters from within the settings menu: Settings>Point Settings>GPS
- The bottom panel displays the locations and distance between each individual NMEA point collection.
- You can exclude groups that have unfavorable NSSDA values or select a range of good values by using the checkboxes next to the groups, or filling out the range field. (Rarely done)

Average NMEA

Filters

HDOP  Fix: 3D

Group Size  Range

Group	UTM X	UTM Y	NSSDA %
<input checked="" type="checkbox"/> (15)	492961.5	4489961.12	2.12
<input checked="" type="checkbox"/> (15)	492960.12	4489959.35	1.75
<input checked="" type="checkbox"/> (15)	492959.15	4489958.6	1.96

UTM X      UTM Y      NSSDA %  
492960.254    4489959.688    3.15

5 (meters)

CALCULATE      CREATE

## Traverse and Sideshots

### *Creating a Traverse/Sideshot*

1. Add a Traverse Point from the add point button in the lower right of the screen. By default it creates a point with no forward or backward azimuth.
2. Enter in either or both Forward and Backward Azimuth. (A red number will appear to the right of the backward azimuth if the difference between the two numbers is not 180 degrees between the two numbers.)
3. Enter in the Distance and Angle. (If your range finder auto calculates a horizontal keep at angle at 0.0)

### Notes:

- Azimuths are clockwise from north.

The screenshot displays a mobile application interface for creating a traverse point. The top status bar shows the time as 10:28 AM and battery at 96%. The app header is green with a back arrow, 'Poly 1', a lock icon, and a menu icon. The main form has a white background with a large '1050' at the top. Below it, the 'Azimuth' section has 'Fwd' with '95' and 'Back' with '272' and a red '(3)' to its right. The 'Slope' section has 'Distance' with '0' and 'S. Angle' with '0'. Below that is a 'Mag Dec' field with '0'. A 'Comment' field is at the bottom of the form. The bottom of the screen has a grey bar with 'Media (0)' and a green circular button with a white plus sign.

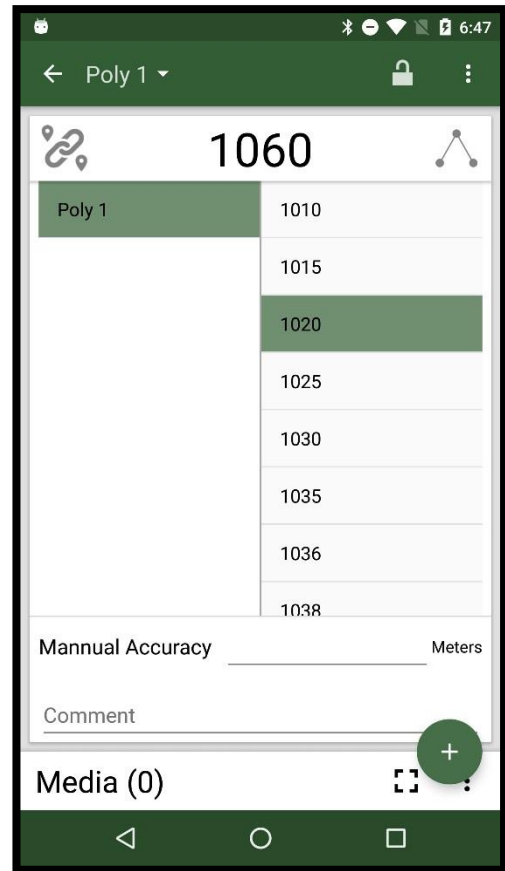
## Quondam Points

### *Creating a Quondam*

1. Add a Quondam Point from the add point button in the lower right of the screen.
2. Select the Polygon containing the point you want to link to.
3. Select the Point.
4. If you want to change the accuracy for the quondam you can do so below the point selection list where it says manual accuracy.

### Notes:

- The word Quondam means former.
- Quondam defines the coordinates of a new point with the exact coordinates of a former point.





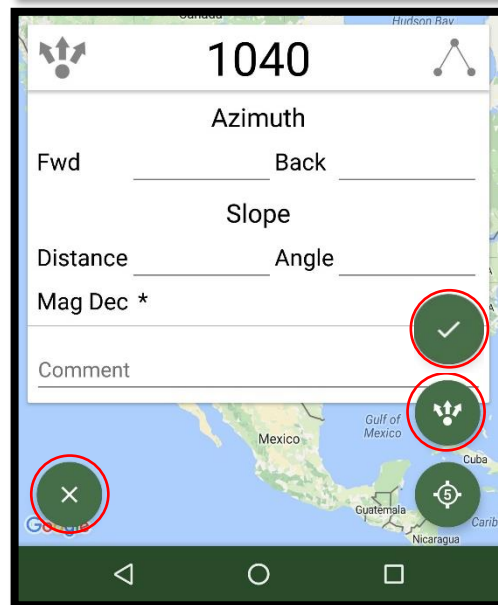
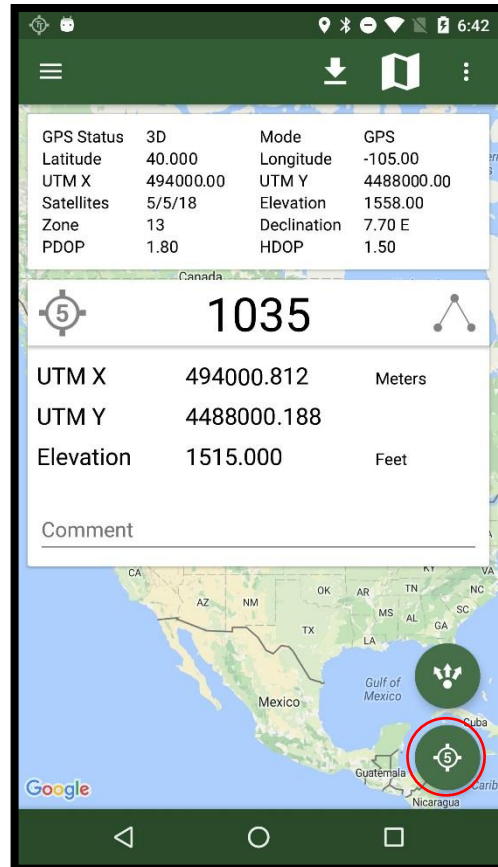
## Take 5 Method

### Taking a T5 Point

1. To start taking points using the Take5 method first go into the Points form. Then using a long click on the add point button select Take5.
2. To take a point press the GPS Button with the 5 in the middle. This will start collecting measurements to be averaged for the point.
3. Once the point is created you have the ability to add a comment or take it on/off boundary. To take another Point just click the T5 button again.

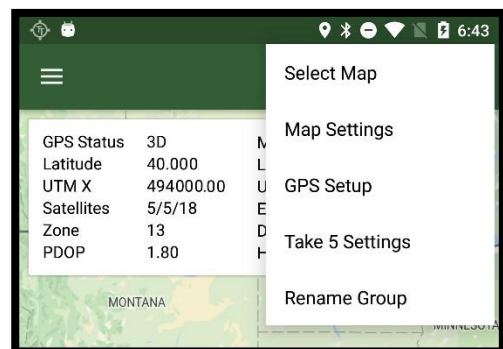
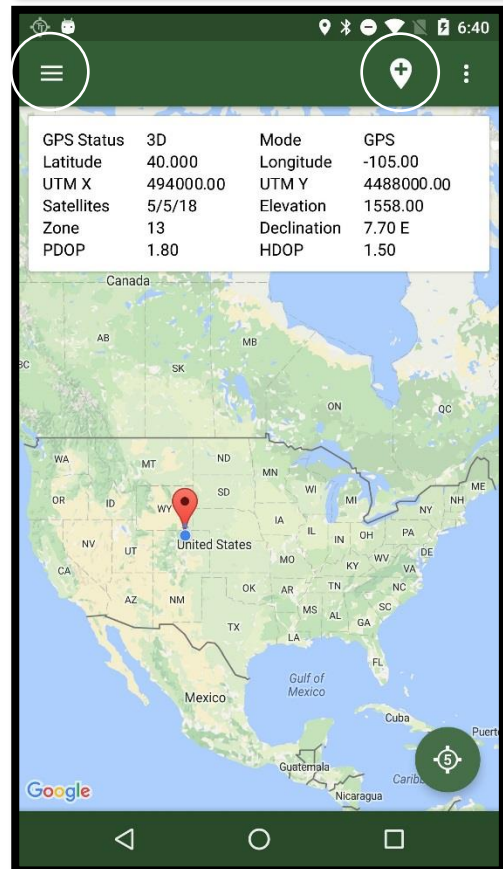
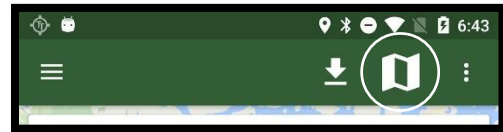
### Taking a Sideshot

1. You don't need to leave the Take5 form in order to take a Sideshot. All you do is press the Sideshot button located directly above the T5 button.
2. A Sideshot card appears where you can enter data. If you decide to cancel the Sideshot just click the Cancel button located in the lower left corner of the screen. Hit the check mark to finish the Sideshot. (You may create more than one Sideshot after a Take5 point.)
3. When you are done with collecting points, just hit the back button to go to the Points form.



## Notes:

- The Take5 form has Map Mode. This mode allows you to see the entire map as well as change which polygons are visible. To enable Map Mode click the map icon located in the toolbar next to the menu. (You cannot take Sideshots in Map Mode or edit point details) To return to Point collecting mode press the add point icon which is now in the location that the map button was.
- To view and edit the polygons displayed on the screen swipe right from the left side of the screen or press the hide/show button located in the top left of the screen.
- Settings
  - Change the map type
  - Change map settings
  - Setup the GPS
  - Set the T5 filter settings
  - Edit group name

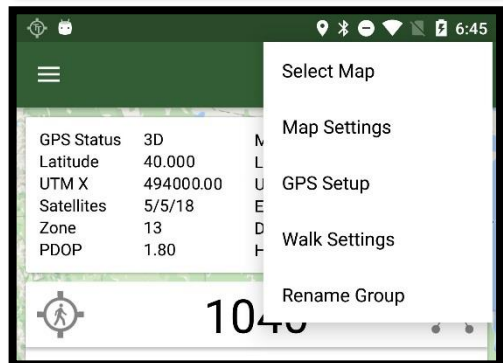
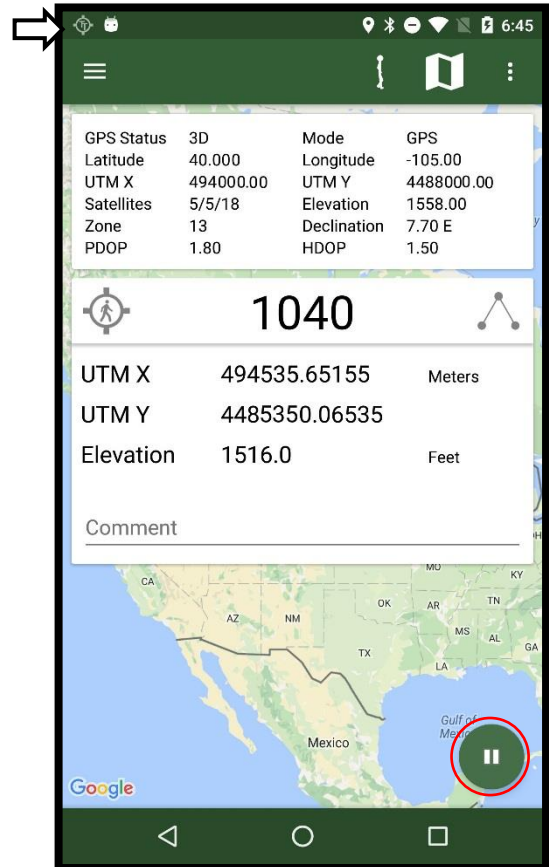


## Walk Method (Bread Crumb)

1. To collect points using the walk method select walk after a long click for adding a point in the Points form.
2. Next press the walk button located in the bottom right corner of the screen.
3. To Pause a walk relick the walk button which should now show a pause symbol.

### Notes:

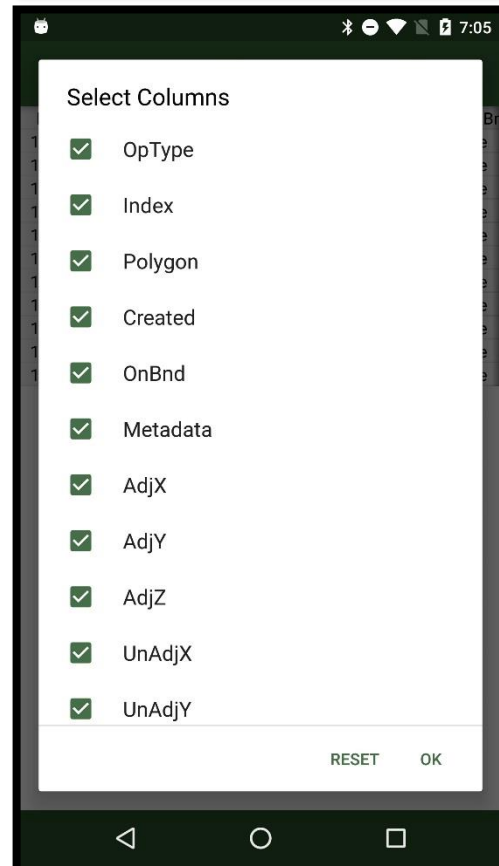
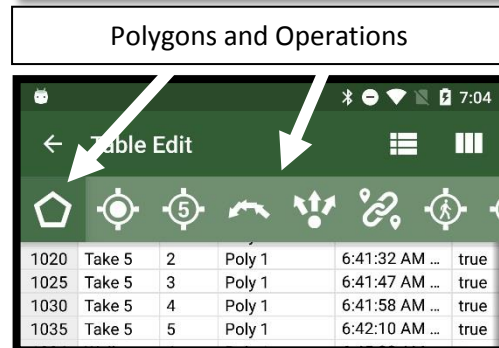
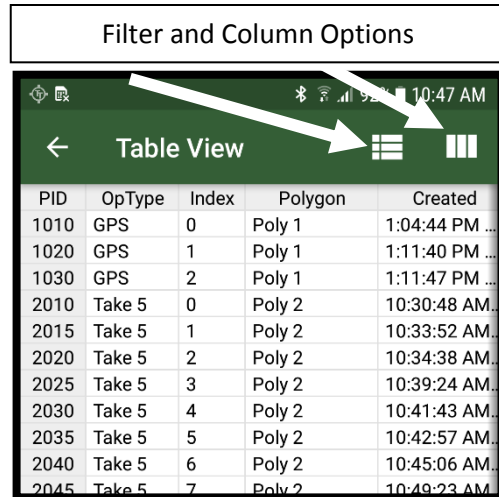
- The Walk form has a map mode.
- Settings
  - Change the map type
  - Change map settings
  - Setup the GPS
  - Set the Walk filter settings
  - Edit group name



## Table View

(Rarely needed in the field)

1. The Table View allows you to see all the details of all the points at once. It is located under the DATA tab.
2. You can filter the points in the view by selecting the Filter icon located left of the column options.
3. To filter polygons select the polygon icon on the left side of the filter bar. You can filter which operations are shown by toggling them in the filter bar.
4. You can show and hide which columns are visible by selecting the Column icon in the far right corner of the screen.

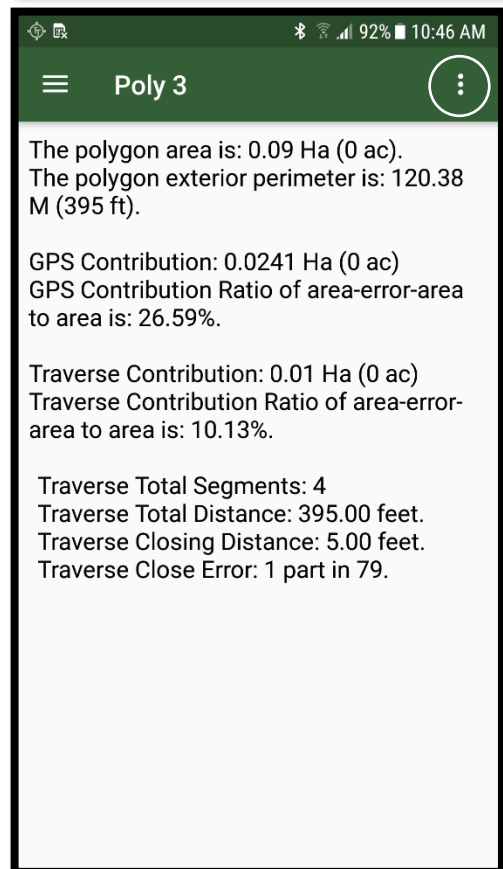
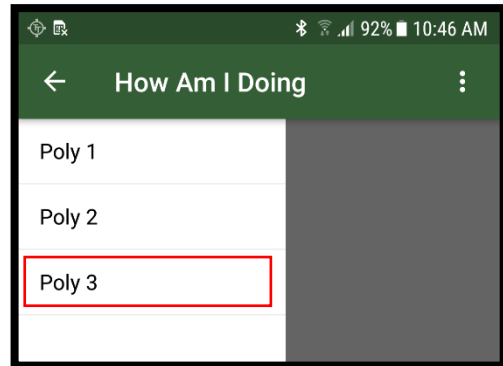


## How am I Doing? (HAID)

1. The HAID form is located under the TOOLS tab. To view the details of a polygon you just need to click on it.
2. To view a different polygon swipe left from the edge of the screen to view the other polygons.
3. In the menu you have the ability to show and hide the points located in the polygon and their values.

### Notes:

- Good for field use.
- Best to modify information in the office, especially since the cruiser may be doing a piece of the unit's boundary.



## Plot Grid

(Great field tool if allowed by the home office.)

1. The Plot Grid form is located under the TOOLS tab.
2. Select the polygon for which you wish to generate plot.
3. For the start point to be random, leave blank, otherwise select a Point inside the polygon which to start the point generation operation around.
4. Select whether you want your points inside or outside of the polygon.
5. Use default metadata units or change to a different metadata.
6. Enter the spaced distance between the points.
7. Optionally add a tilt (rotation) to the grid in degrees.
8. Rarely done and discouraged by many but you can optionally take a subsample of your points you want.
  - a. Select SubSample
  - b. Choose your limit by the amount of points or percentage created.
  - c. Enter a value for the amount or percent of points.
9. Press the Add button in lower right corner of the screen to start generating points.

The screenshot shows the 'Generate Plots' form with the following settings:

- Polygon: Poly 1
- Start Point: Random
- Location: Inside
- UOM: FeetTenths
- Grid Interval: 25 x 25
- Tilt: -10
- SubSample:
- Sample Type: Points

A red circle highlights the '+' button in the bottom right corner.

The close-up shows the 'SubSample' section with the following details:

- SubSample:
- Points: 25
- Percent: (available as an alternative option)

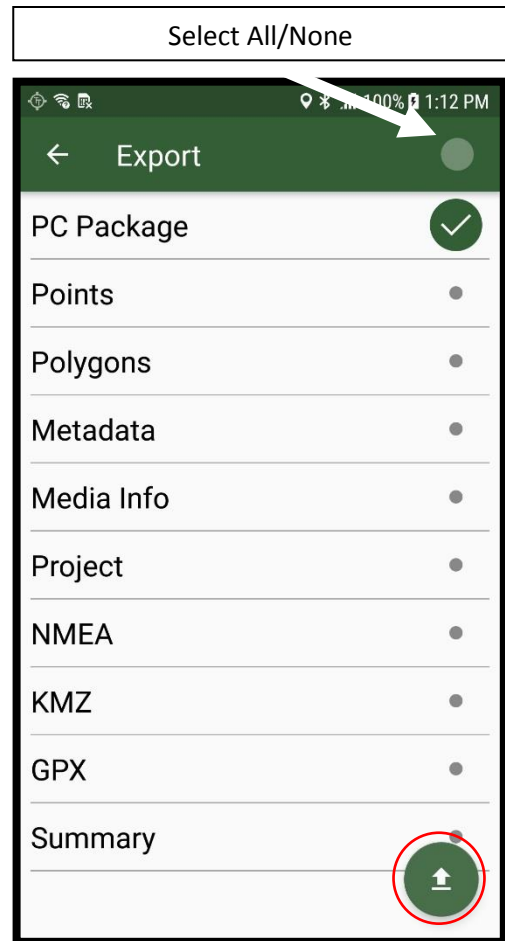
## Export

(Must be used regularly for processing and backup)

1. The Export form is located under the TOOLS tab.
2. To choose what to export press the circle to the right of the items you want. To choose all or none press the circle located in the top right corner of the screen. (The best practice is shown in the example to the right.)
3. To export to the TwoTrails folder press the export button located at the bottom right of the screen. If you wish to choose a different folder to export to press and hold the export button.

### Notes:

- PC Package should be the default export when transferring to the PC. It contains the TTX as well and the TTMPX files which contain media information.
- The default output location is in the documents folder under TwoTrails.
- Output types are all CSV except for:
  - KMZ (Google Earth)
  - GPX (GPS and Garmin)
  - Summary (Text File)
  - PC Package (Zip File)
- Shapefiles are currently not supported in the Android version of TwoTrails. (KMZ is available)

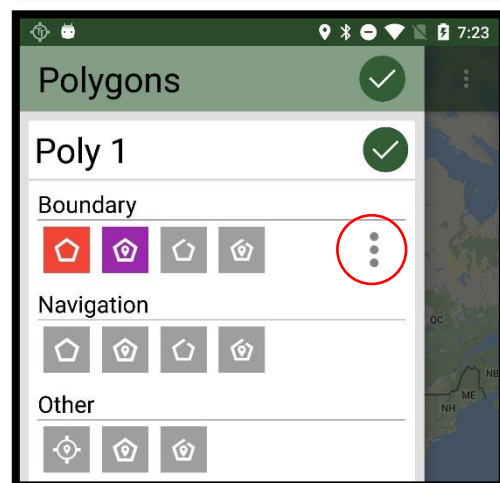
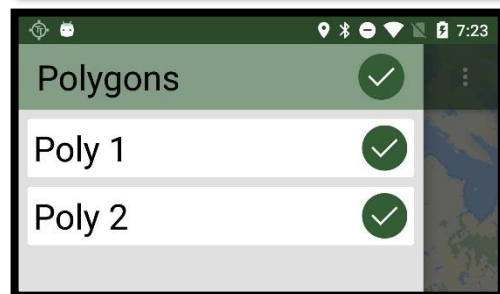
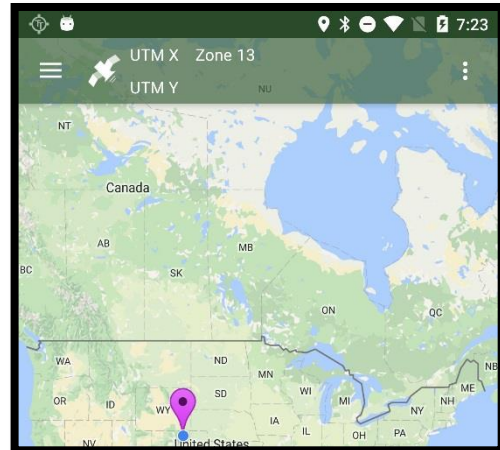


## Map

1. The Map is located under the TOOLS tab. Here you can view all of the polygons and points. To view the list of polygons swipe from the left of the screen or click the list button on the top left in the toolbar.
2. To adjust all of the polygons click on the top green bar. This will open the master polygons options panel. Use this to set the settings for all polygons.
3. To adjust individual polygons select the polygon from the list. A panel will show allowing you to set individual options. Press the polygon header to close the panel. The checkmark in the header is the polygon's master visibility switch to turn the entire polygon on or off.

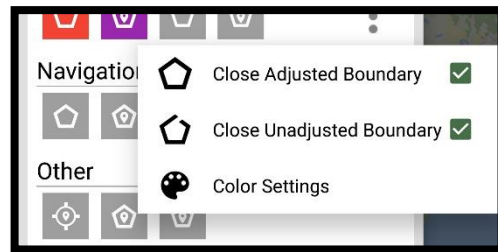
### Notes:

- The option icons in order from top left to bottom right are:
  - Adjusted Boundary
  - Adjust Boundary Points
  - Unadjusted Boundary
  - Unadjusted Boundary Points
  - Adjusted Navigation
  - Adjusted Navigation Points
  - Unadjusted Navigation
  - Unadjusted Navigation Points
  - Way Points
  - Adjusted Misc Points
  - Unadjusted Misc Points

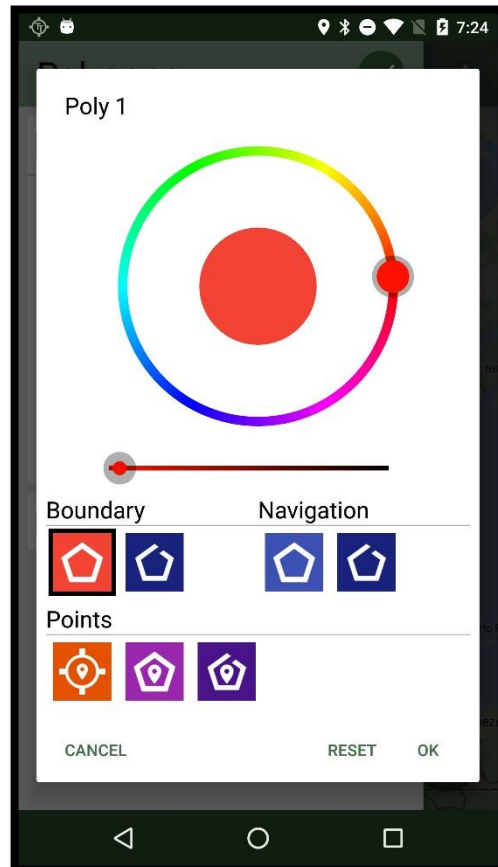




- The polygon menu located in the individual polygons contains the options to close the boundaries if there are no finalizing points in the polygon.



- The polygon menu also contains the setting to customize the color of the polygon shapes and points.

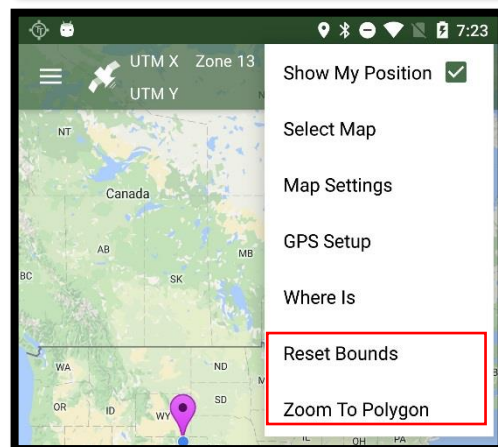


- In the Map menu you can turn your position on the map on and off. You can also change settings and map types. There are also two options for zooming to selected areas on the map:

- **Reset Bounds** will allow you to reset the zoomed area on the map to the selected **Map Tracking** option in the map settings shown here.

- **Follow:** follows your position on the screen using the GPS.
- **Polygon Boundary:** limits the screen view to the selected polygon.
- **Complete Boundary:** limits the view to include all of the polygons in the project.

- **Zoom to Polygon** will zoom to the location of a selected polygon.

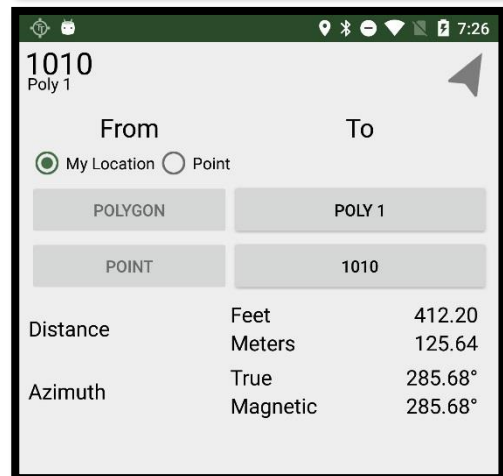


## Where Is & Point to Point Navigation

1. To navigate to a point simple click on it. It will display information about the points as well as allow a preview of the Where Is screen.
2. To view the Where Is screen simple click on the bar located on the bottom of the screen.
3. From here you can set the point you want to go to as well as where you are heading from.
4. The arrow in the top right corner points to the direction of the point. (Internal Compass is required as well as a connected GPS. The compass is not guaranteed accurate)

### Notes:

- You can also access the Where is screen from the menu in the toolbar of the map screen.

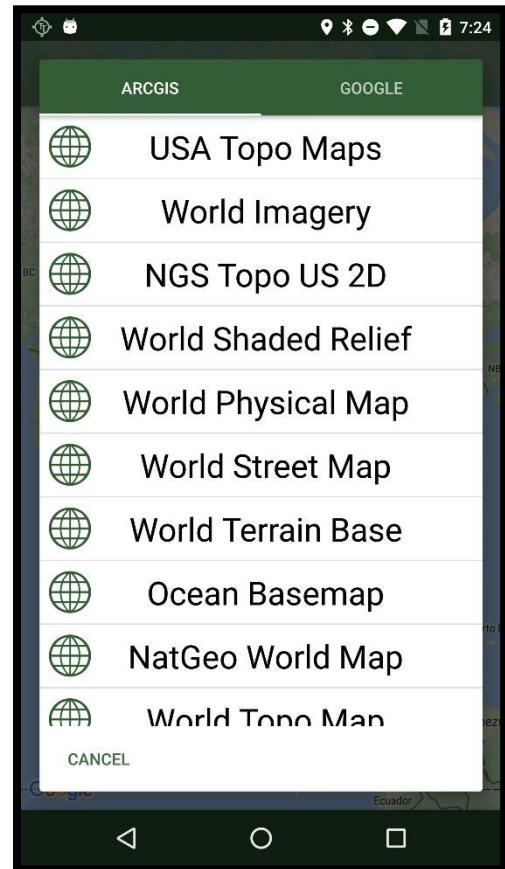


## Changing the Map Type

1. To change the map type select **Select Map** in the Map menu.
2. Now you will be given a list of usable maps you can use.
3. Simply select the map to load it.

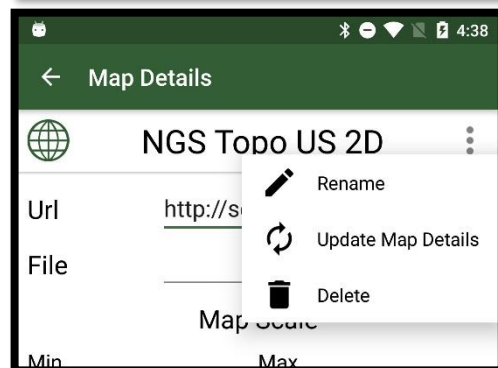
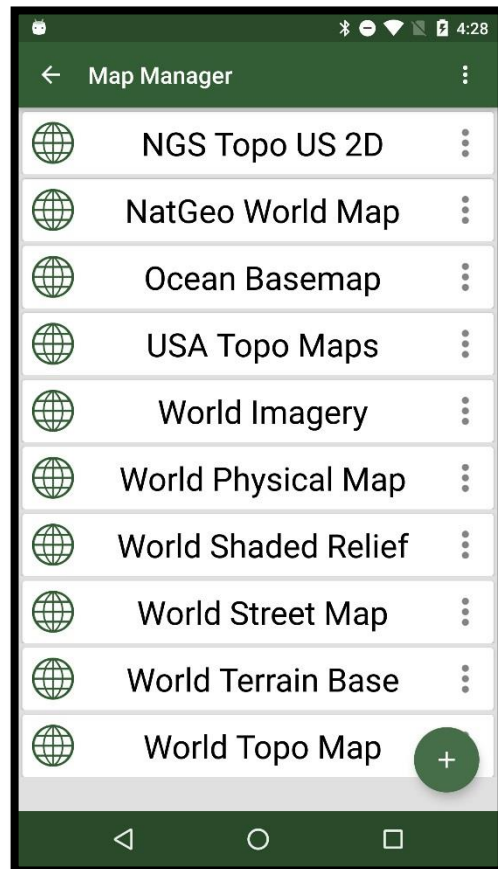
### Notes:

- Two services are currently available for map bases: ARCGIS and Google.
- All Google Maps require an internet connection in order to use. ARCGIS Maps can be used online or offline using the Map Manager to downloaded to the device or copied from a computer.
- Maps that have a line crossing diagonally through a globe are maps that are offline.



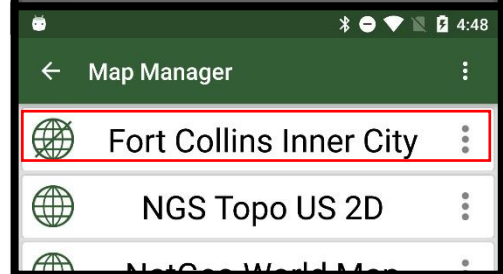
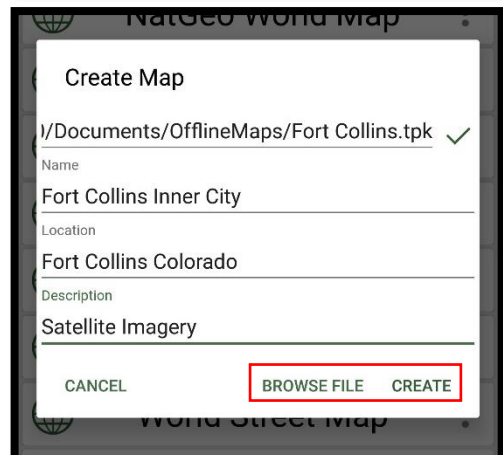
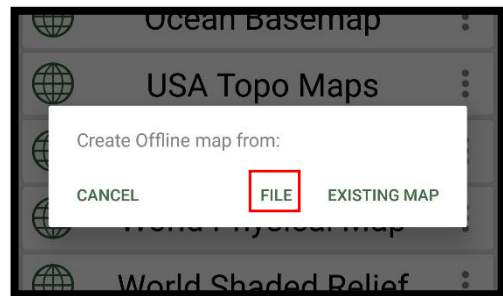
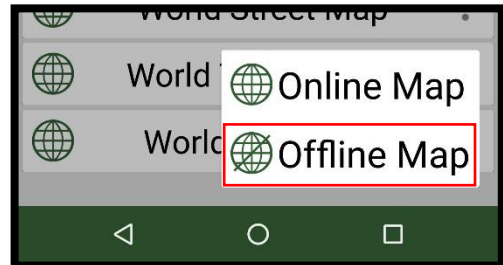
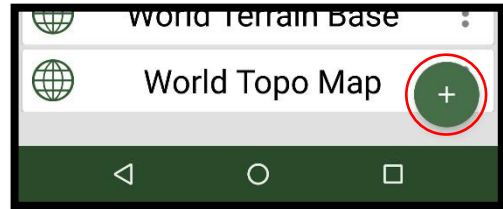
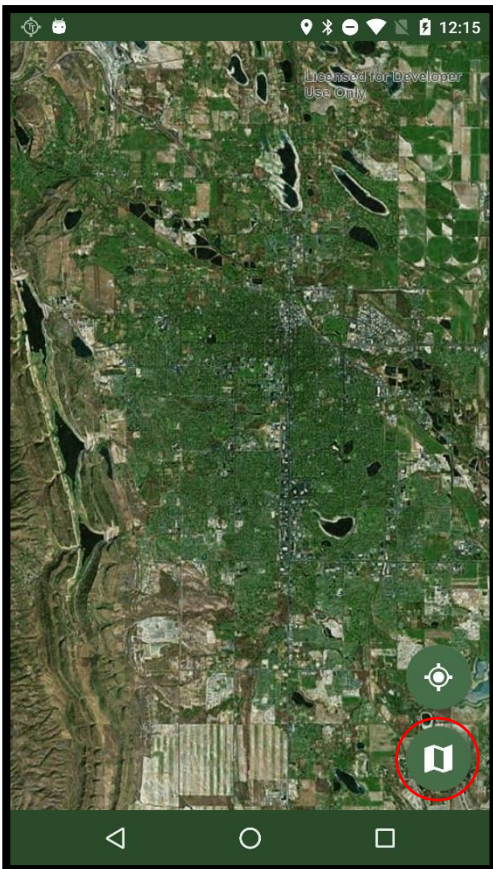
## Map Manager

1. The Map Manager is located under the TOOLS tab.
2. To view or edit map details, select one from the menu.
3. Here you are able to change the location name or the description of the map. In the menu you will find the option to rename the map, change the file location, and option delete the map from the device.



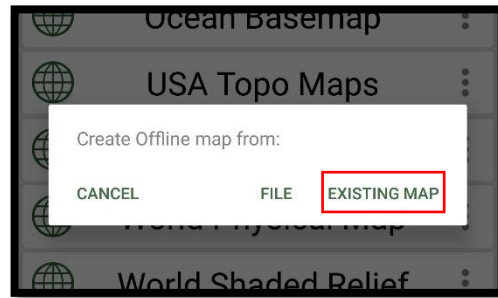
## Adding an Offline Map from a File

1. Copy a .tpk (ArcGIS Map File) file onto your device.
2. In the Map Manager press the add map button in the lower right corner of the screen and select Offline Map.
3. Select **File**. In the Create Map dialog enter in the details of your map. Browse for your file using the browse button in the bottom of the dialog.
4. Fill out the dialog and press CREATE. Your map should now be added.



## Creating an Offline Map from an Online Map

1. In order to download an online map directly to the device you will need an ArcGIS account. (AGOL)
2. In the menu of the Map Manager select Login to ArcGIS and enter your username and password.
3. Now press the add map button in the lower right corner of the screen and select Offline Map.
4. Select EXISTING MAP and choose the map you want to download.
5. Fill out the information in the dialog and press CREATE.
6. A Map will now appear. Zoom to the location you want save. When you have zoomed to your area select the map button in the bottom right corner. It will start the map download.



### Notes:

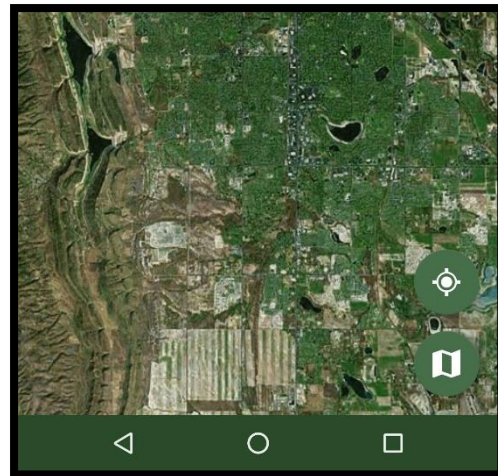
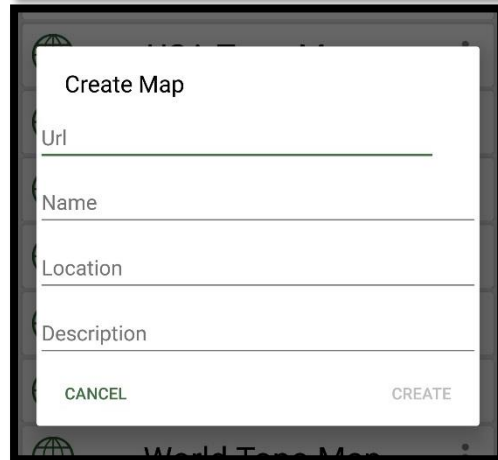
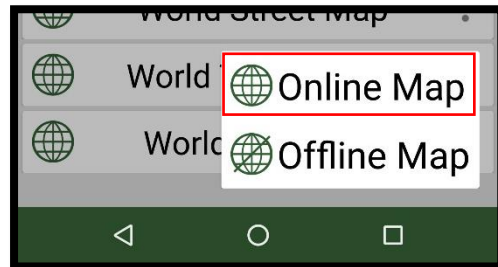
- Some ArcGIS map services have limits on how large a map can be downloaded. Try and select an area only as large as you need.
- Not all ArcGIS maps are downloaded make sure that your map service supports exportable map tiles before you download.

## Adding an Online Map

1. To add an offline map select press the add map button and select Online.
2. Fill out the information of your map including the service URL (address online that the map is coming from).
3. Press CREATE to add the map.

### Note:

- Some online services require accounts in order to use their maps. Enter in your credentials in the Login to ArcGIS option in the MapManager Menu to enter these credentials.

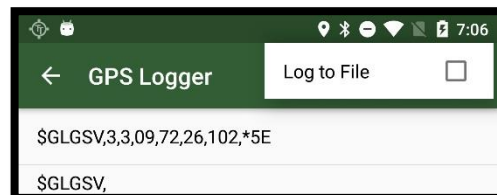
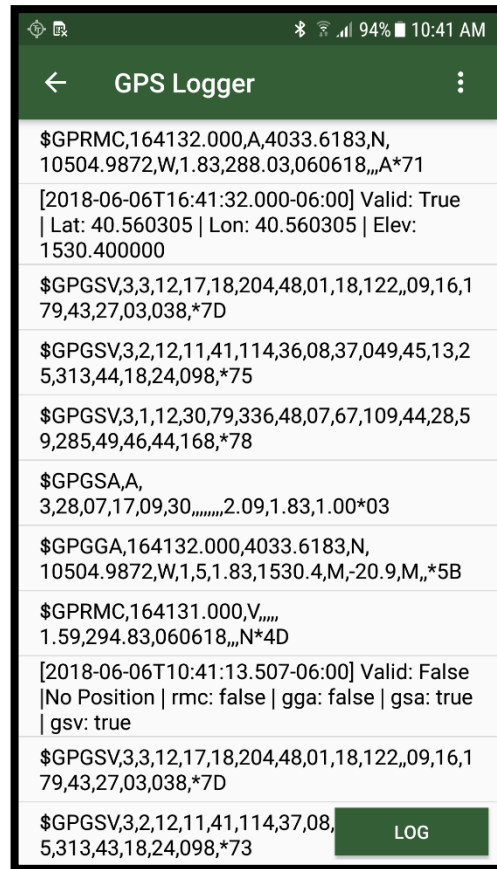


## GPS Logger

1. The GPS Logger is located at the bottom of the TOOLS tab.
2. To start logging press the LOG button in the bottom right corner of the screen. To stop press it again.
3. To log the data to a file select **Log to File** from the menu.

### Notes:

- Every time a valid burst (a collection of NMEA sentences) is received a message will appear in the list telling showing the location and elevation. If an invalid burst is received it will tell you which strings in the burst are invalid.





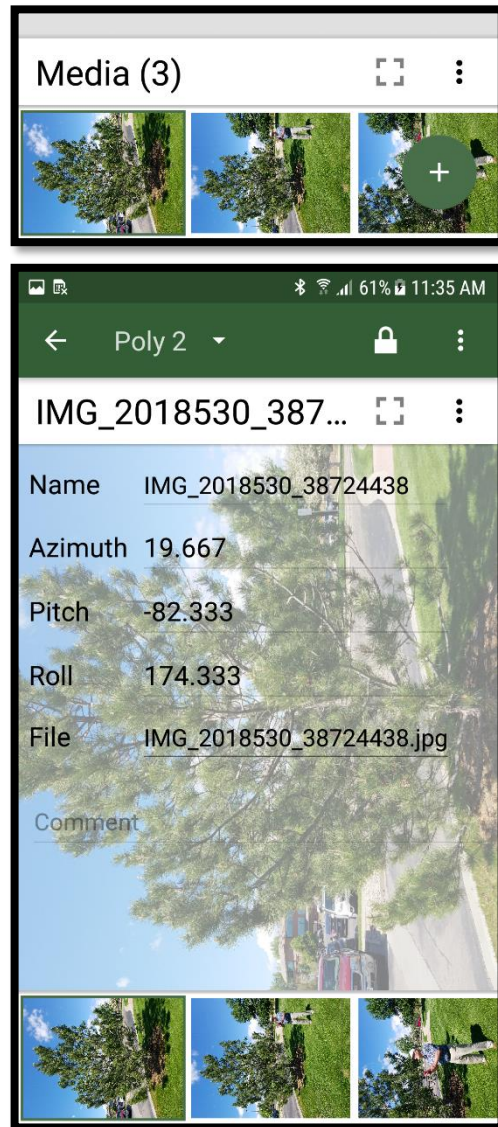
## Media

### View and Edit Point Media

1. To preview point media click the media bar at the bottom of the point form.
2. Click the thumbnail of the media you wish to view.
3. To edit the media information unlock the point and fill out the fields. You can delete the media from the menu on the media bar.
4. To view the media in full screen you can click the full screen icon next to the menu icon on media bar.

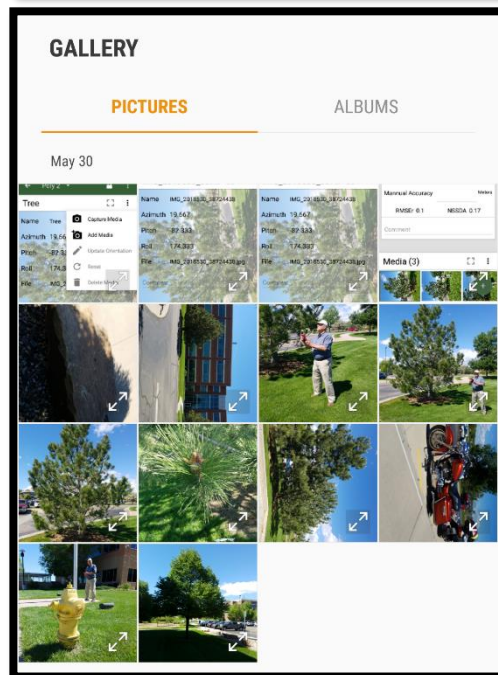
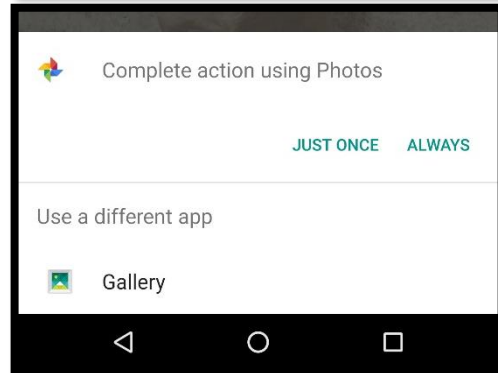
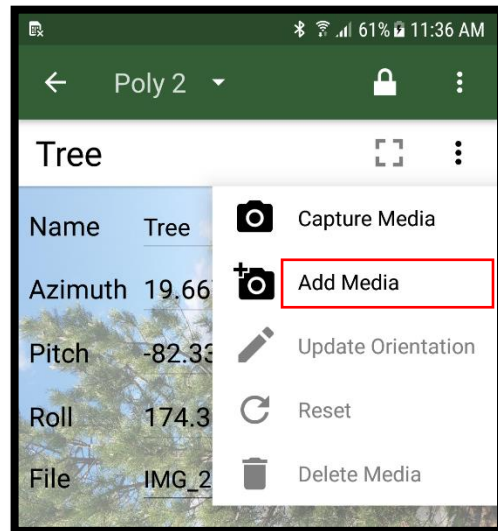
### Notes:

- You can navigate between media just like you can with points by sliding left and right.



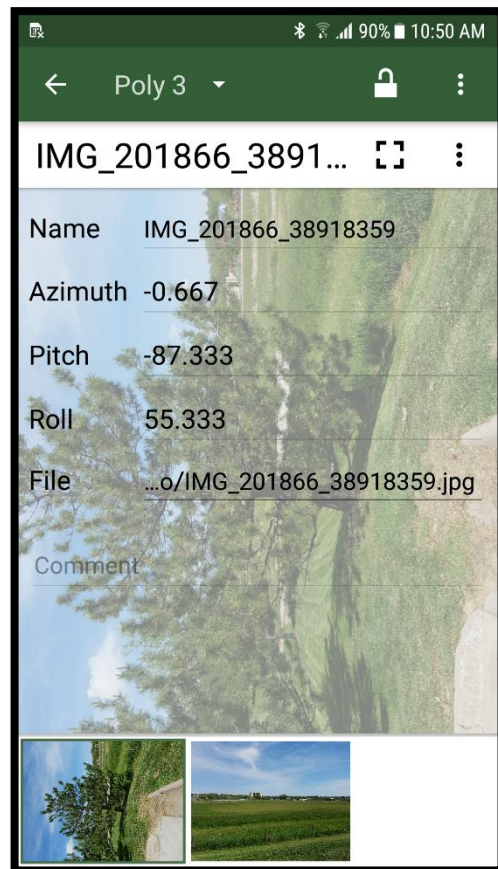
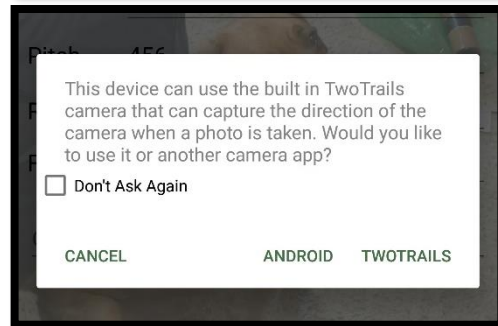
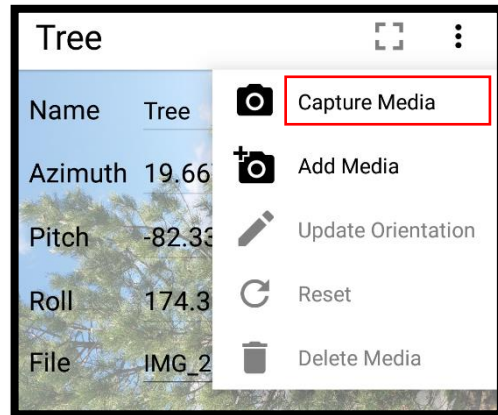
## Adding Media

1. To add new Media select Add Media from the menu in the media bar.
2. If you have multiple media viewers on your device you may be asked to choose one.
3. Select the media you want to associate with the point.
4. Media is now added to the point.



## Capturing Media

1. To capture media select Capture Media from the menu in the media bar.
2. An option may show up depending on the capability of your device to use TwoTrails custom camera. If you choose so you can use it to capture images. TwoTrails camera captures the image as well as the direction of the camera at the time of capture.
3. Once you capture your image it will be associated with your point.



## Help

If you are experiencing an issue with the program or have gotten an error message, you can contact Gary Boyack (gboyack@fs.fed.us) or Bryan Miller (bryancmiller@fs.fed.us) for help with the issue. When contacting please attach an exported package that includes the project you are working on as well as the log file from the device with the issue.

### How To Export an Error Log:

To create an exported package select **Misc Settings** which is the last option in the Settings menu. Select **Export Report**. You may be having an issue and it may ask you if you would like to attach the current project you are working on with the exported report. If you are having an issue with a specific project or a file please attach the project (recommended). The report will be exported to the TwoTrails folder which is located in the documents folder of your device. Then transfer it to the PC and email it to us for help.

Notice: The FMSC/FS/USDA does not endorse or promote any brand of GPS receiver or Android Mobile device. The QStarz GPS Receiver and Moto X Pure Android smartphone are both trademarked under their respected companies.