



SilvAssist Mobile

User's Manual

June 2023

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	10/27/20	User's Manual Created
Rev. 1	1/13/21	Update Authentication Server information (pg.2-2), Cruise Settings Project Progress description (pg.4-2), add Troubleshooting item (pg. 7-1). Replace image for successful sync (pg. 3-4)
Rev. 1.1	1/22/21	Add info on where to find apk for download (pg. 2-1)
Rev. 1.2	2/16/21	Add pin drop info to map button section (pg. 4-4), update troubleshooting (pg. 7-1)
Rev. 2.0	5/25/21	Many updates to Map view (Section 4.0) and add limiting distance calculator (pg. 5-4)
Rev. 3.0	8/7/21	Screenshot Updates
Rev. 4.0	11/17/21	Added updates to tree grid, tree reordering, autofill species, screenshots
Rev. 4.1	8/19/22	Updates for TPK file location
Rev. 4.2	9/15/22	Many screenshot updates, add section on routing
Rev. 4.3	6/16/2023	Settings Page, Cruise Settings Page, Drop Plot, Mobile Plot Allocator, Cruise Settings, Field Maps App Linking, Tree Grades

SILVASSIST MOBILE USER'S MANUAL

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1.0 GENERAL INFORMATION

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1.1 Product Overview

SilvAssist Mobile is the mobile forest inventory data collection app that works together with SilvAssist Inventory Manager. Forest inventory projects that are set up in SilvAssist Inventory Manager are downloaded to SilvAssist Mobile for offline field data collection. This includes navigation to pre-defined plot locations within the SilvAssist Mobile app and collecting inventory data at these plot locations.

SilvAssist Mobile uses project templates that have been previously created in SilvAssist Inventory Project Manager and assigned to a user by a System Administrator. Inventory projects are then available for download to your device as offline database replicas. These project replicas are what allow you to navigate and collect data fully disconnected in the field. Data that has been collected offline will then be synchronized to cloud servers by the user when the device is again connected to the Internet. During the sync process, any data collected and synchronized by other user devices will also be downloaded to your device for reference or auditing purposes.

This user's manual is intended to provide a complete overview and introduction to SilvAssist Mobile, covering all features and characteristics to enable confident and accurate field data collection. Screenshots contained are primarily from an Android device but functionality on iOS devices are largely the same.

1.2 Minimum System Requirements

For Phones or Tablets:

OS Version: Android 8.0+, iOS 14+

CPU Speed: Quad Core 1.2GHz

RAM: 2 GB or higher

Internal Storage: 16 GB or higher

Connectivity: Wi-Fi (LTE compatible but not required), Bluetooth 4.0+, GPS

Web Browser: Google Chrome recommended

Other: Ruggedized devices or equivalent cases are recommended for field use

2.0 APP AUTHENTICATION

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2.1 Authentication

After installation you will need to authenticate SilvAssist Mobile and log in with your assigned credentials. These credentials will be assigned and provided to you by F4 Tech or your system administrator. Your device needs to be connected to an Internet signal before performing the steps below.

Enter the username and password you have been given. Passwords are case-sensitive.

Below the password line is where an app server can be selected to authenticate on. This should be left on the default SilvAssist unless you are directed to change it by F4 Tech. ****See Section 8.0 Appendices for further information****

Tap Log In to authenticate the app. You will then see a welcome message and the app will redirect to the Projects page.

If you have selected an incorrect server or mistyped your credentials, you will see an “Invalid user/password” message. Re-check your credentials and server setting and try again.

If you need to reset your password, make sure you have the correct server selected and click the “Forgot Username/Password?” link. A web browser window will open where you can enter the email associated with your account to be sent a password reset email. **NOTE: You must have the correct server (SilvAssist in most cases) selected before clicking this link.**

Authentication Screen

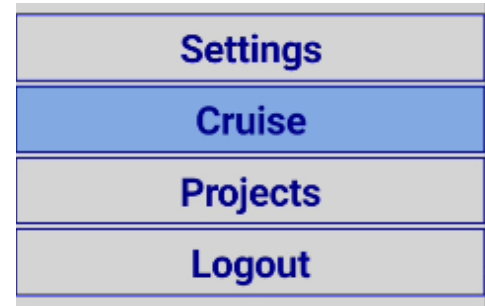
3.0 APPLICATION PAGES

3.0 APPLICATION PAGES

3.1 Menu Overview

SilvAssist Mobile has an intuitive and easy-to-use interface. The app consists of four main pages: Authentication/Logout, Settings, Cruise, and Projects. You can switch between pages using the Main Menu by tapping on the icon in the upper-left corner of the screen then tapping on the page you want.

Some pages have an additional Context Menu located in the upper-right corner of the page. This menu provides additional functions relevant to the page you are on.



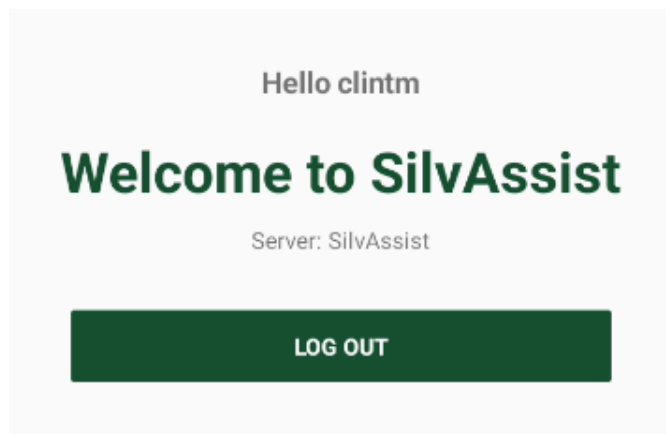
Main Menu



3.2 Authentication/Logout Page

As covered in section 2.2 of this manual, you must log in to the app upon initial app installation. If you have changed your account password, need to change servers, or change devices with another user, click the Logout button in the menu. When a user is logged in, this page will display the username as well as the current server. Tap the Log Out button to sign out.

NOTE: If you change your password, you MUST Log Out and re-authenticate the app.



Logout Page

3.3 Settings Page

The settings page contains app information such as installation date, date of last app update, and version info. There is also an email link that can be used to contact F4 Tech, if necessary.

Options

Display Mode: This setting overrides your device's screen rotation setting. Options are Auto Rotate, Always Portrait, and Always Landscape. Experiment with these settings to best fit your preferences and cruise templates.

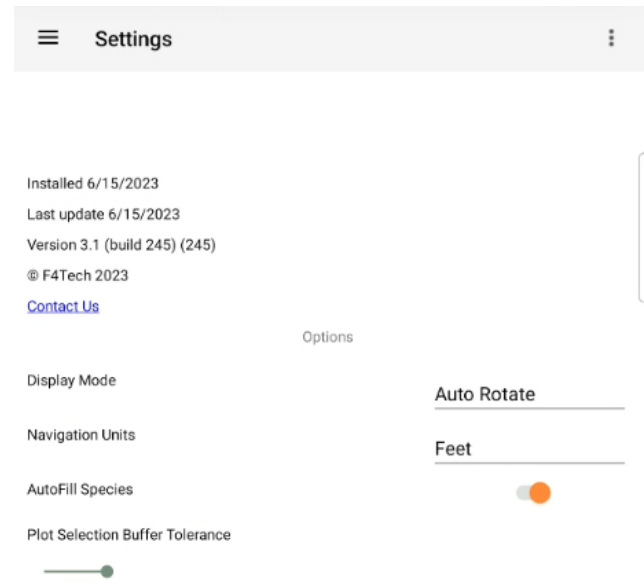
Navigation Units: Choose the units you would like your distance from plot to be displayed in while navigating in the cruise map. Options are feet, meters, or chains (66 ft.). The default unit is feet.

Autofill Species: Autofill Species is a setting that is intended to simplify data collection by automatically filling in the species value of a tree record based on the tree record above it in the grid. The Autofill species procedure is discussed further in Section 5.3.

Plot Selection Buffer Tolerance: This adjusts the sensitivity of selection when selecting a plot on the map screen to navigate to. The further the slider bar is to the right, the more sensitive the selection tolerance. If your device has a smaller screen size with high DPI, you may need to adjust this to a higher value.

Submit Backups: The option in the context menu on the Settings page is for diagnostic support. You will only need to use this if instructed to do so by F4 Tech.

Light/Dark Mode: While not a setting on this page, SilvAssist Mobile will automatically adapt the application to light or dark mode (white vs black backgrounds) based on your device's settings.



Settings Page

3.4 Cruise Page

The Cruise page is the page you will use most frequently. This is where projects (also known as replicas) are displayed after they have been downloaded for offline use in the field.

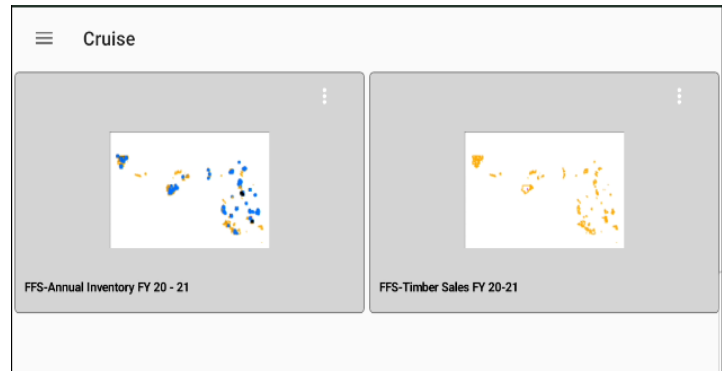
The Cruise page will load as the default page when opening SilvAssist Mobile if you have projects downloaded for offline use. If you have not yet downloaded a project, the Cruise page will appear blank.

Cruise projects are displayed in a grid with thumbnail previews above the project name. Tapping on a project will open the project and you can begin work. See section 4.2 for in-depth instructions on data collection.

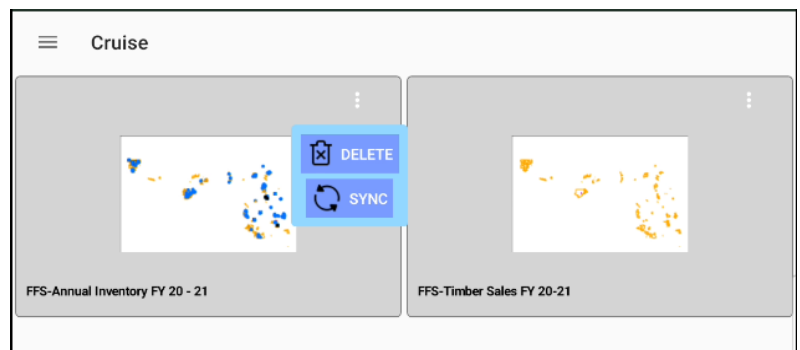
Like the context menu shown in section 3.1, each cruise project in the grid has a context menu in the upper-right corner. This menu has two options, Delete and Sync:

Delete: When projects have been completed or are no longer active, you may wish to remove the project from your Cruise screen. Clicking on this button will delete the offline replica from this screen and your device.

You will be asked to confirm your deletion when the button is clicked. The app will also notify you if you have unsynchronized data for the project you have selected. **Make sure your project is synchronized before deletion. There is no way to recover data past this point.**



Cruise Page with Downloaded Projects



Cruise Project Context Menu

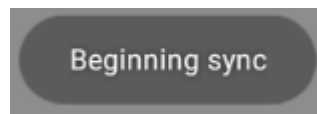
3.4.1 Syncing

Data synchronization is how your offline data is transferred to the server for storage and processing. Syncing also delivers updated data from the server and is how you will see plots taken by other cruisers as well as be able to audit another cruiser's plot. Syncing will also deliver data. Syncing is an easy process. Most importantly, you will need to ensure you have a strong Internet connection. While a good Wi-Fi connection through a router or hotspot is preferred for signal stability, syncing over cellular connection is possible.

From the Cruise Page, open the context menu for the target project and select Sync. You will then see the green busy indicator appear and a notification showing you that the sync process has begun. Syncing is usually a quick process, but sync time can vary based on the amount of data being transferred to and from the server. The busy indicator will spin until the process is completed.

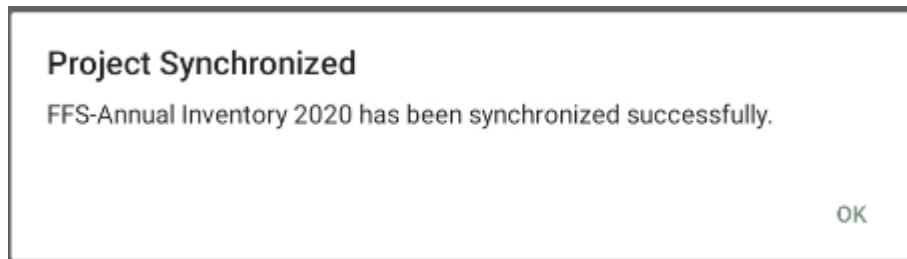


Busy Indicator



Beginning Sync Notification

When the sync process is complete, you will see a message on the screen confirming the project has successfully been synchronized.



Project Synchronized Successfully

As a matter of habit, synchronization should be completed by each cruiser at the end of every day and then again before starting the next day. This will allow the data to be processed on the server for display in the Inventory Project Manager as well as enabling field users to see where others have been if working in close proximity.

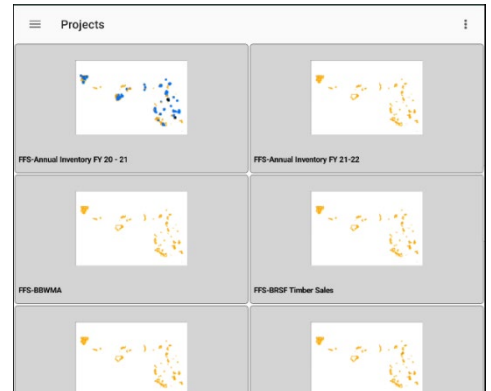
3.5 Projects Page

The Projects page is where all cruise projects that have been assigned to a user will appear. These projects are arranged as cells in a grid. Available projects may vary from user to user depending on how they have been assigned to the logged in user. Contact your Administrator if you are missing a project you should have access to.

The Projects page serves two purposes: 1) Downloading Project Replicas. 2) Refreshing Project Replicas.

Downloading Project Replicas

Downloading projects is the first step in being able to collect data in the field. Downloading projects will be covered in-depth in section 4.1.

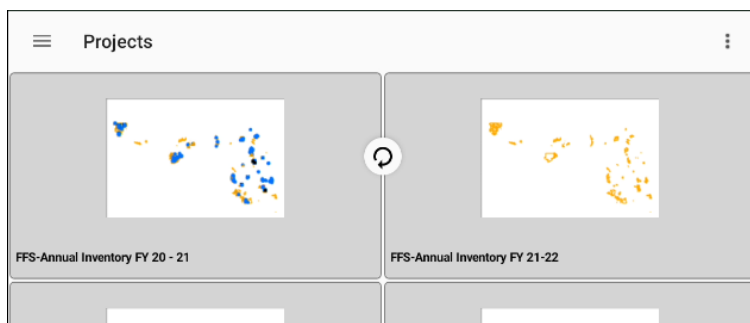


Projects Page View

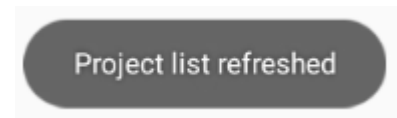
3.5.1 Refreshing Project Replicas

Refreshing project replicas is also an important way to receive updates that may have been applied to a cruise template. At times you may be told by support or your administrator to “refresh your projects.” Refreshing projects is needed when there has been a change to the template such as updated error checking, column changes, or pick-list changes. This process will also refresh the list of projects on the page if you are not seeing a project you should. Your device will need to be connected to an Internet connection before refreshing the project list.

To refresh: Place your finger and hold it on the screen in the top half of the display. Continuing to press on the screen, slide your finger down towards the bottom of the display until you see a circular icon appear. Remove your finger from the display and the circular icon will begin to spin. When the process has completed, you will see a notification on the screen.



Refresh Projects Symbol and Animation



Successful Refresh Notification

3.5.2 Projects Page Context Menu

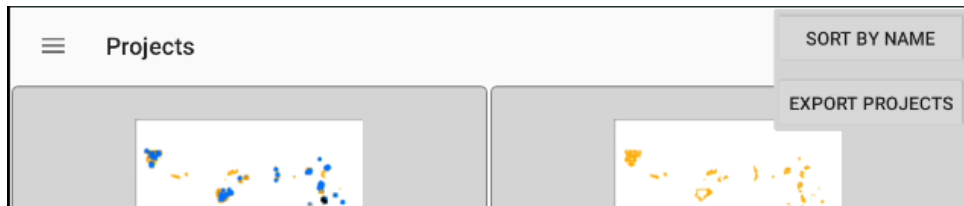
The Projects page contains a context menu with two items:

Export Projects

Export Projects is a diagnostic tool that can be used by F4 Tech during troubleshooting. You will not need to select this item unless you are requested by Technical Support to do so.

Sort by Name

This option will re-order the projects displayed on the page in alphabetical order.



Projects Page Context Menu

4.0 GETTING STARTED

4.0 GETTING STARTED

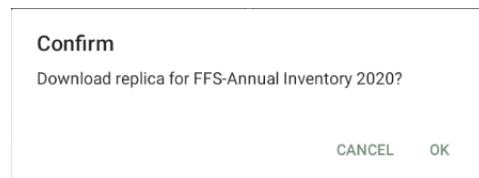
Now that you have installed and understand the app's layout, we will go through a typical workflow used in getting to the field and collecting data.

4.1 Downloading a Project

The first step in the process to collect data is to download a project. Downloading a project is necessary if you have never collected data on a device before. It is not necessary to re-download the same project every time you plan to inventory. If you will be using multiple projects between periods of Internet connectivity, you can also download each project before disconnecting. There is no limit to how many projects you can have on your device.

While it is possible to download using cellular data, connection to a strong Wi-Fi signal is recommended. Always ensure you are connected to a reliable Internet connection before following the steps below:

- 1) From the Projects page, tap on the project cell you wish to download. You will see a window appear asking for download confirmation. If you are trying to re-download a project that is already on your device that has unsynced edits in the project, a second window will appear warning you that your unsynced edits will be lost if you proceed. **If you need to re-download an existing project, make sure to sync the existing replica prior to downloading or you will lose your data.**

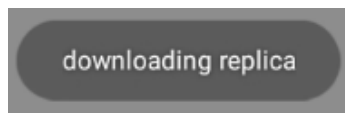


Confirm Replica Download

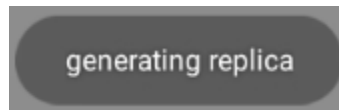
- 2) When you click OK to download the project, you will see the green busy indicator appear. This will spin until the process is completed. Also, during the download process, you will see two notifications pop up near the bottom of the screen. The first pop up is "generating replica." The second is "downloading replica." When you see the "downloading replica" notification, that means the download process is nearing completion.



Busy Indicator



Downloading Replica Notification



Generating Replica Notification

- 3) When the download process has completed, you will see another window appear letting you know the download was a success. At this point you can download another project or switch to the Cruise Page. At this point you could turn your Wi-Fi off and begin collecting data.



Successful Download Message

4.2 Selecting a Project to Cruise

Once you have one or more projects downloaded to your device, you can return to the Cruise Page and select a project to collect data for. Tap on the thumbnail in the grid of the project you wish to open and you will be presented with the Cruise Settings screen for that project.

4.2.1 Cruise Settings Screen

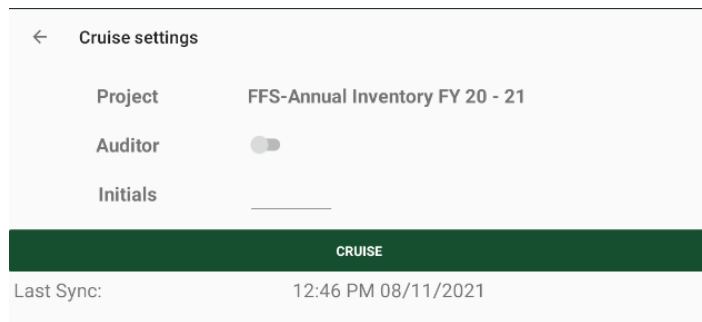
After selecting the project to open you will see the Cruise Settings screen. At the top of this screen, the name of the project you are opening is displayed.

Below the project name is the Auditor toggle. If you are auditing plots, this toggle **must** be turned on before proceeding to cruise. Auditing will be covered more in section 6.1.

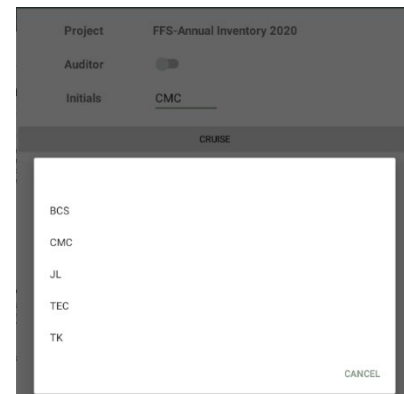
Beneath the Auditor toggle switch is where you will select your assigned Cruiser ID, or initials. Tap on the entry line to be presented with a picklist showing the available Cruiser IDs and select the appropriate value. **Note:** If Auditor mode is turned on, only those users enabled for auditing are shown in the picklist.

Below the Cruise button, the date and time of your last Sync (or initial download if not yet synced) is displayed. Below this is the Project Progress summary pane. This pane shows current overall project progress as well as visited plots per cruiser. Plots per Cruiser does not include Auditor plots. The Plots Per Cruiser list is scrollable if the list of cruisers is long enough to extend off the bottom of the page.

When you have selected the correct Cruiser ID, press the Cruise button to be taken to the Cruise map.



Cruise Settings Screen

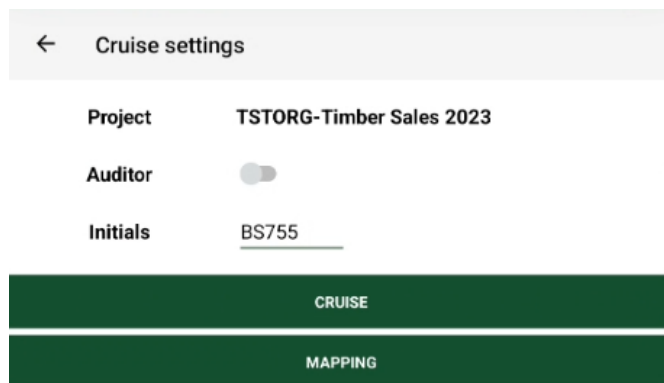


Cruiser ID Picklist

Last Sync:		1:17 PM 05/14/2021	
Project Summary		Plots Per Cruiser	
Total Plots	7466	4_RH	13
Plots Visited	5358	AKim	123
Plots Unvisited	2108	AS	49
Plots Audited	263	AU	23
Plots Dropped	0	BC	171
		BE	1
		BEI	144

Last Sync and Project Progress

If the mobile allocator is enabled for the selected project, you will also see a Mapping button on the screen. Clicking on this button will take you to the Plot Allocator Map page where you can allocate plots for a stand and change the plot sizes for all plots in a stand. This feature is explained more in section 6.0.



Mapping Button

4.3 Cruise Map Screen

The Cruise map screen is where you will select plots to navigate to or edit. The map screen can also be used to review inventory progress or view aerial imagery, stands, and other reference layers.

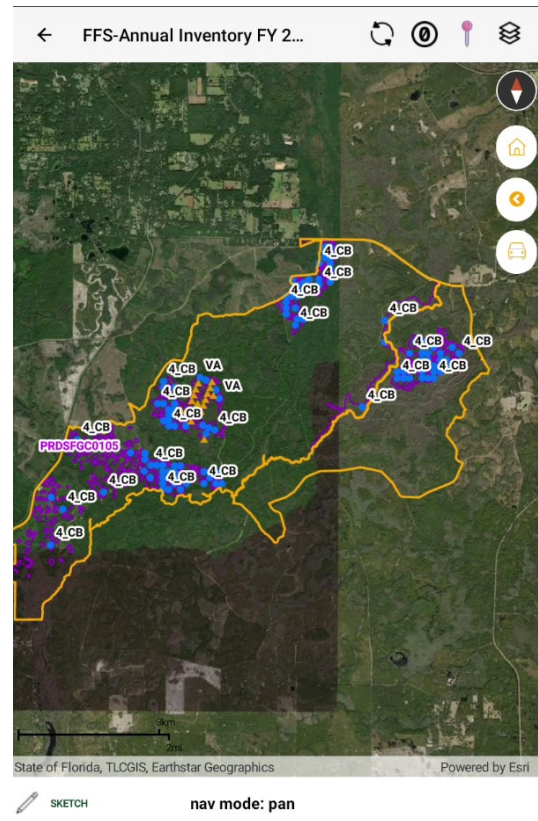
4.3.1 Cruise Map Overview

Operation of the map view is through familiar touch and drag panning and pinch-to-zoom actions like other mainstream map/navigation applications.

The Cruise map screen has the name of the project at the top of the screen in the header bar. To the left of the project name is a back arrow that will take you back to the Cruise Page. To the right of the project name are a series of buttons with different functions (see 4.3.2).

The main portion of the screen is the map. On the map you will see your current location as a blue dot. On first load, you will see all map layers that are enabled by default. For most projects this will be the Plot layer and the Stands layer. See 4.3.4 for changing layers displayed. This is where you will select a plot to navigate to. Navigation is covered in-depth in section 4.4.

Below the map view is the navigation information panel. This panel will update as you are navigating and will show you distance and bearing to plot as well as your current display mode. Also in the navigation panel is a compass rose demonstrating the current orientation of the map.

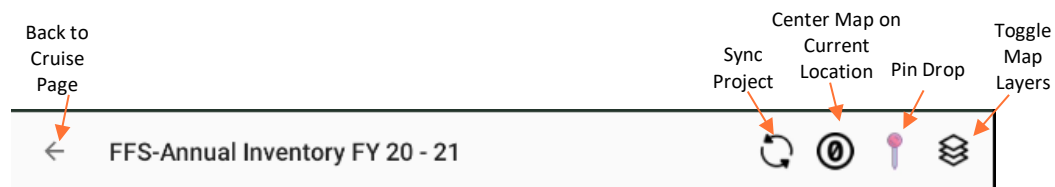


Map Screen

4.3.2 Map Header Buttons

The Map Header Button panel contains several important buttons for map display and navigation. More importantly it currently also contains the Sync button, as of this writing. The Sync button is scheduled to be removed from this view to only allow syncing at the Cruise Page as shown in Section 3.4.1. It is still functional here, however.

Other buttons on this panel include Cancel Navigation, Center Map on Current Location, and Toggle Map Layers. The Map Layers toggle is covered in Section 4.3.4 and the Navigation buttons will be covered in Section 4.4.



Map Buttons

Some templates may have Pin Drop enabled. Pin Drop gives you the ability to place a plot at your current location. The Pin Drop icon will appear in the map pane as a pink pin. When you are at the location you wish to collect data, tap this icon and a new plot will be created.



Pin Drop Plot Icon

4.3.3 Plot Symbology

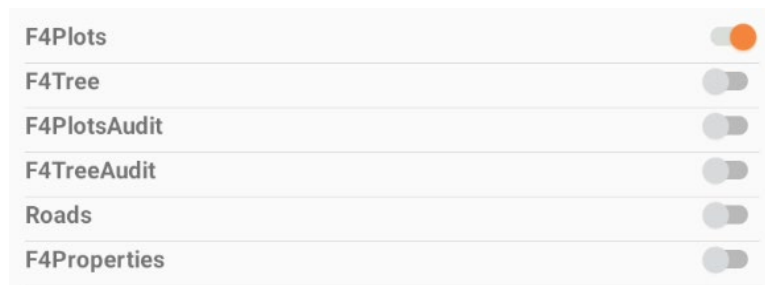
Plots will change symbology based on their status. Plots you inventory on a given day will change to Visited on your device as you save each plot after data collection. For others to see your plots marked as Visited, and you to see their Visited plots, you will need to sync your project. Visited plots may also be labeled with the Cruiser ID showing which cruiser inventoried which plot.

Status	
▲	Un-visited
●	Visited
■	Audited
✖	Dropped

Plot Symbology

4.3.4 Map Layers

By tapping on the Toggle Map Layers icon (see 4.3.2), you will see the layers that make up the map view. Each layer can be toggled on and off to aid visibility when viewing the map. This toggling only affects the layer's visibility in the map and does not affect data collection. The map layers are configured when the project is initially set-up with some turn off by default. Some of the layers that are turned off like Roads and Properties can help reduce clutter when looking at the map. Other layers (like the Tree layers) are required for app functionality but may not have any symbology at all and will not be visible even when turned on. Unless TPKs are present, the Stands layer will become the map's basemap layer and will always be visible and unable to turn off. See Section 6.2 for more about TPKs.



Map Layers

4.3.5 Map Imagery

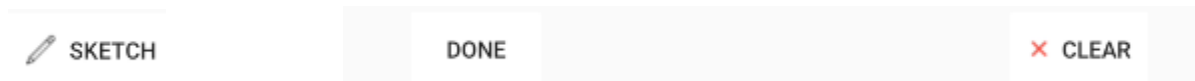
If you open a cruise project and enter the Map without being connected to internet, you will see a plain white background for the map basemap. If you have internet connectivity, the Esri Imagery basemap will appear on your screen. To use this imagery offline, you can zoom in the map and pan around the area you will be working in and the application will cache the imagery for offline use. You can now turn off

WiFi and will have the basemap available for offline use in the areas that you panned the map to. This imagery will stay cached until you back out of the map and go back to the main Cruise page. If you have a cellular device and are connected to the network, the imagery will display always.

TPKs can also be loaded for permanent offline imagery and will appear on top of the basemap imagery if present. TPKs are covered in Section 6.2.

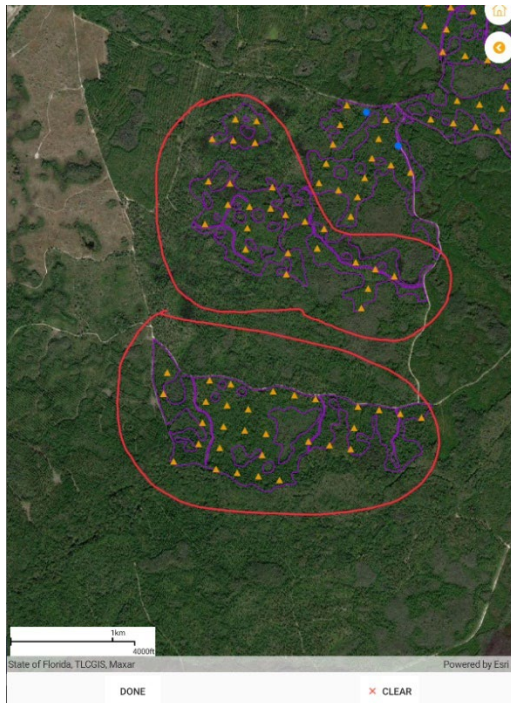
4.3.6 Sketch Mode

At the bottom of the screen in the Navigation pane, there is a “Sketch” button that will enable Sketch Mode. Sketch Mode allows you to create redline/markup on the map by drawing on the screen. To sketch, click the Sketch button then draw your line on the map. Click the Done button to save your sketch or the Clear button to erase it. Your sketch will persist on the map as long as you do not back out of the map to the main Cruise selection page. If you need to remove your sketch before backing out of the map, click the Sketch button and then Clear.

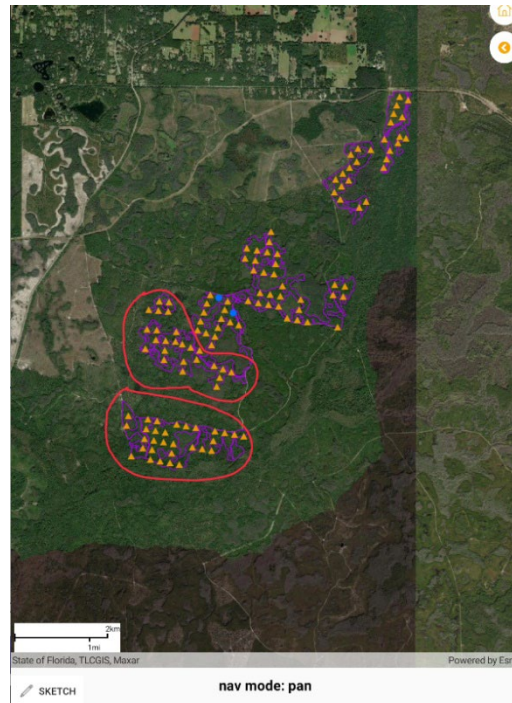


Enable Sketch Mode

Done and Clear Buttons



Sketch Mode Active



Sketches with Sketch Mode Inactive

4.4 Navigation

Navigation is an extension of the Map screen. This is how you will make your way to a plot to initiate data collection. Navigation is a simple process as demonstrated below.

4.4.1 Using the Map

In addition to the Map Header Buttons, there are three buttons displayed on the map itself. Their functions are described below:



North Arrow : This icon shows the orientation of the map with respect to North (red half of compass) and will rotate as the map is rotated. Tapping on this icon returns the map to North Up.

Home : Tap this button to zoom to the full extent of all plots in the project.

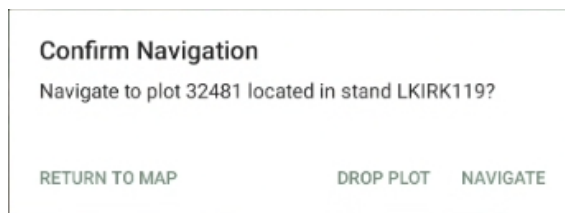
Previous Extent : Tap this button to go back to your previous view extent(s)

Routing : Tap this button and then the map to open your device's navigation application for on-road directions. See 4.4.5 for more information.


Map Navigation Buttons

4.4.2 Selecting a Plot

To select a plot for navigation, simply tap your screen on the plot to select it. You will see a window asking you to confirm your selection. Tap Navigate to continue or Return to Map to return to the map without navigating. Your selected plot will be highlighted in light blue on the map.



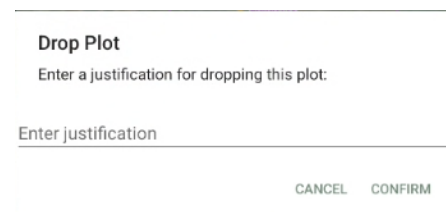
Confirm Navigation

You can also choose to drop a plot in this window, if it is inaccessible. If you select Drop Plot, you will need to enter a justification to drop the plot. The symbology of a dropped plot on the map will be:  .

When you select a dropped plot on the map, you will have the option to Undrop the plot.



Selected Plot



Info
Plot 32481 has been dropped.

UNDROP OK

Drop Plot dialogues

4.4.3 Nav Mode and Recentering

When a plot is selected for navigation, the map will lock in Recenter mode. Recenter mode will keep the map centered on your current location throughout the navigation process. You can check the icon for Center Map on Current Location to see the current mode. If it is a crosshair symbol, the map is centered on your location. If it is a circle with a 0 (off symbol) then the map will not be centered on you and you can pan around the map. The nav mode status is also displayed in the Navigation pane at the bottom of the screen as either “nav mode: center on location” or “nav mode: pan”.

Recentering is helpful when navigating to a plot as the map will constantly adjust to show your location relative to the plot’s location. If at any time during navigation you wish to pan around the map, tap the crosshair icon to turn off recentering.



Nav Mode:
Recenter



Nav Mode: Pan

If you need to cancel navigation to plot, tap on the red X symbol in the Map Header Button panel. If you do not have a plot selected for navigation, this icon will not appear in the Map Header Button panel.



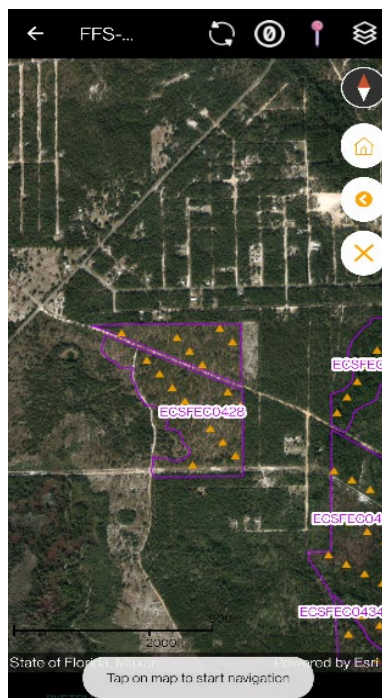
Cancel Navigation

4.4.5 Routing

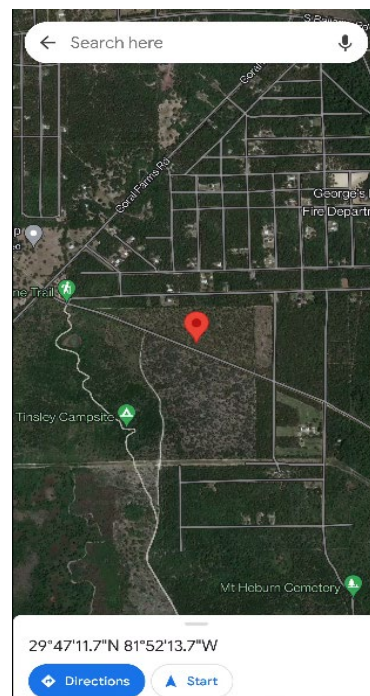
The Routing tool allows you to select a spot on the map and open the corresponding coordinates in the default navigation app on your device (Google Maps on Android, Apple Maps on iOS). Simply center the map on the location you wish to drive to and tap the car icon. A prompt will appear to tap anywhere on the map. Tap on the map where you wish to navigate to and the default map application will open with those coordinates as the location of interest.



Routing Button



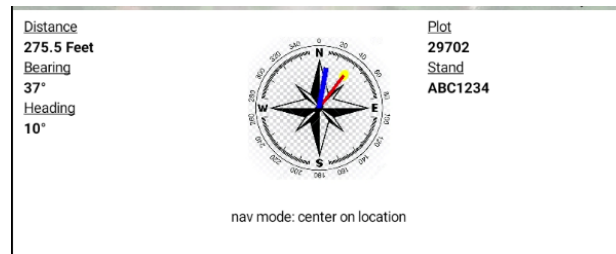
Routing



4.4.6 Distance, Bearing to Plot, and Compass

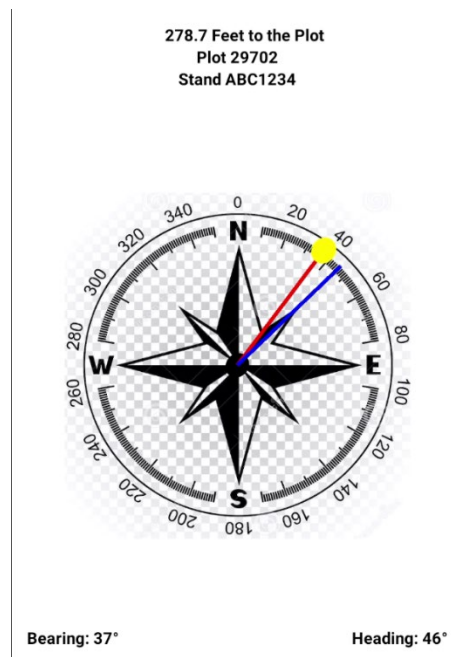
At the bottom of the screen in the Navigation pane, you will see the current nav mode and your distance and bearing to plot. Distance and azimuth direction to plot will update dynamically as you are traversing towards (or away from) your plot. Also displayed once you start traversing is your current heading in degrees.

Within the compass displayed you will see a red line pointing to a yellow point. This is the direction of the plot from your current location. As you begin to traverse, a blue line will appear showing your current heading. When the blue and red lines overlap, you know you are heading in the correct direction. The current selected Plot ID and associated Stand ID are also displayed.



Navigation Pane while Navigating

Tapping on the compass while in map view will display a full screen compass for navigation. Tap the screen again to return to map view.



Full Screen Compass

4.4.7 Navigating to Plot and Plot Arrival

Once you have selected your plot and have begun moving in that direction, your blue dot will show an arrow pointing in the direction you are travelling. A red line will be drawn between your current GPS location and the location of the selected plot. As you move closer, the distance to plot, azimuth bearing, and heading bearing will update constantly in the Navigation Pane.



Traverse Direction

During Project Template set up, your administrator will choose an acceptable threshold for allowable distance to the true GPS plot center (up to 10 meters or 32.8 feet). You will not be able to collect data unless you are within this required distance.

When you are within the configured distance threshold of the selected plot, your device will sound an audible alert and a notification window will appear telling you that you have arrived on plot. Tapping Confirm will take you to the Data Entry screen. Cancel will return you to the map to continue navigating if desired.

You have arrived at your plot. Are you ready to edit?

CANCEL CONFIRM

Arrival on Plot

5.0 DATA ENTRY

5.0 DATA ENTRY

Data entry is the core component of the SilvAssist Mobile app. Efficiently collecting accurate, high-quality data is essential for making important business decisions. This section will demonstrate all components of the Data Entry screen that you will see after arriving on plot. Data is entered in a variety of inputs: full keyboard typing, number pad typing, toggle switches (presence/absence) and preconfigured pick lists. The style of data input is configured on initial template configuration.

5.1 Overview

When you arrive on plot and start editing, you will be on the Data Entry screen. Data Entry is categorized in different tabs that represent different nested subplots categories where data will be collected. Tap on the tab to switch between them. Available tabs will depend on how the Inventory Template was configured by the Administrator. The Plot tab will always be shown. Below is a common example for an Annual Inventory template.

At the bottom of each tab will be a Save and Map button. Pressing the Save button will run the data error checks and if your data is valid, will return you to the map. Error checks will be discussed in detail in section 5.4. Pressing the Map button will return you to the map immediately if you have not entered any data. If you have data entered and press the map button, you will see a window alerting you to the fact that there is unsaved data in the plot. Pressing cancel returns you to the data entry while pressing Continue will discard your edits and then return you to the map.

Data Tabs →

PLOT	REP	MID	TREE
PlotID: 123487665			
DOF_ID	WASFWA0207		
PlotID	123487665		
OverPlotSz	20-20 BAF		
SmPlotSz	0.025		
RpPlotSz	0.01		
Comments			

SAVE PLOT RETURN TO MAP

Data Entry Plot Tab

5.2 Plot Tab

The Plot tab is the first tab you will see upon arrival at your plot. This tab contains helpful identification information for the plot such as StandID, PlotID, and the various plot sizes. This Plot tab has a Comments field that can be used to enter text comments using the device's keyboard. Tap on the entry line to bring up the keyboard.

PLOT	REP	MID	TREE
PlotID: 123487665			
DOF_ID	WASFWA0207		
PlotID	123487665		
OverPlotSz	20-20 BAF		
SmPlotSz	0.025		
RpPlotSz	0.01		
Comments			
SAVE PLOT		RETURN TO MAP	

Plot Tab

5.3 Tree Data Tabs

Data entry tabs like Reproduction (REP), Midstory (MID), and Overstory (TREE) all have a similar format. They are arranged in a grid with columns and rows. Each column is a different data category, and each row is a new tree record. Each tab may have varying levels of data that is required. For example, REP is simply a species and stem count, while TREE records DBH, height(s), crown ratio, etc.

To add a new tree record/row to your grid, tap the + symbol on the left side of the grid or double tap in a cell on the blank grid to add a row and enter data in the cell you tapped. Total tree count for each tab is displayed at the bottom. This is determined as the sum of the values in the tree count field.

To enter data in the grid, tap the entry line in the grid cell you want to add data to. Some columns, like Species, have predefined pick lists to choose from. These will open automatically when you select the cell in the column. When the pick list is open you will see the code followed by the full description. Only the code is displayed in the grid.

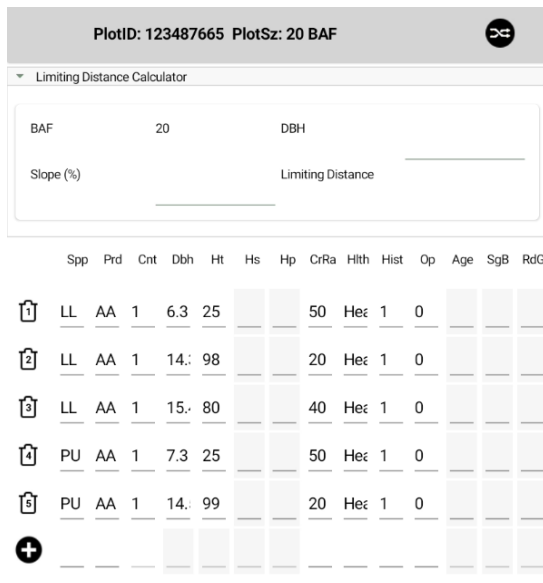
- LL-Longleaf Pine
- LP-Loblolly Pine
- PD-Pond Pine
- PU-Sand Pine
- SA-Slash Pine
- SP-Shortleaf Pine
- SR-Spruce Pine
- SSL-South Florida Slash

Species Pick List



REP Tab

If you have the Autofill Species setting enabled, the species code you select first will automatically be applied to each new tree as it is added to the grid. This will continue until you change species again. For example, if you select “LL-Longleaf Pine” as the species for your first tree, each tree added will also be assigned “LL-Longleaf Pine”. If you change a tree’s species (e.g., “PU-Sand Pine”) that will then become the “default” species. Simply put, when Autofill Species is enabled, a new tree (after the first tree in a plot) will inherit the species of the tree that is immediately above it. You can still change any tree’s species at any time if needed.



Autofill Species

Other columns have numeric or even text entries required. Selecting one of these grids will open the keyboard on your device to enter the data.

Every row/tree is numbered sequentially, displayed within the trashcan icon to the left of the grid. To delete a row/tree record from the grid, tap the trashcan icon for that record and confirm its deletion.

When you have finished your plot, tap the Save button. The app will then process the error checks. If there are no errors, you will be notified of a successful save and return to the Map. If there are errors, a message will appear alerting you to what needs to be addressed. See Section 5.4 for more on error checking.

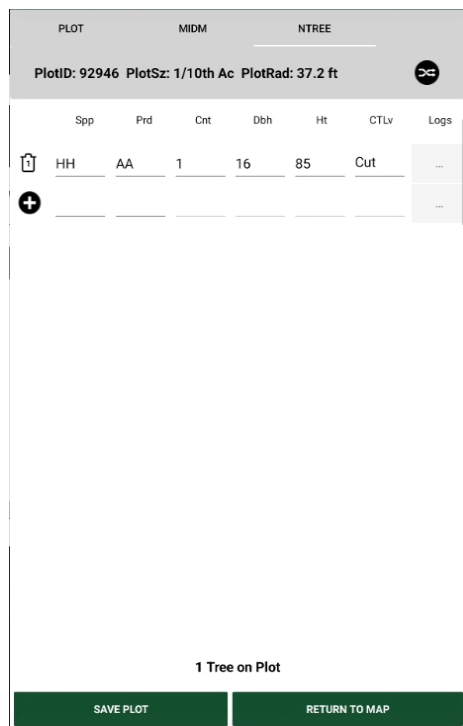
Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CrRa	Hlth	Hist	Op	Age	SgB	RdG
LL	AA	1	6.3	25		50	Hex	1	0				
LL	AA	1	14.	98		20	Hex	1	0				
LL	AA	1	15.	80		40	Hex	1	0				
PU	AA	1	7.3	25		50	Hex	1	0				
PU	AA	1	14.	99		20	Hex	1	0				

Tree Tab

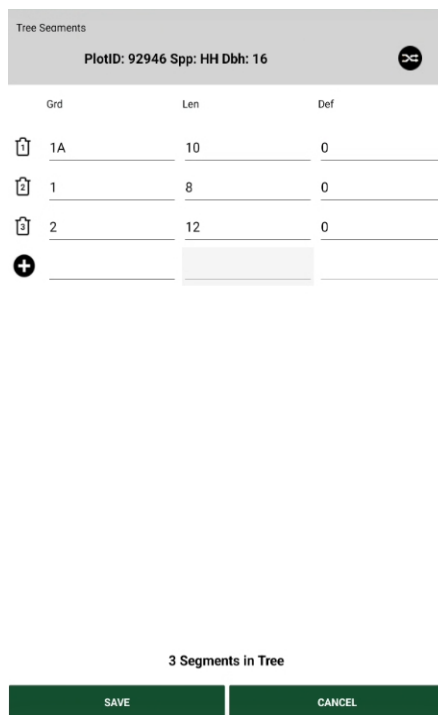
5.3.1 Tree Grades

If Tree Grading is enabled for your project, there will be an extra column in the tree grid titled Logs.

Each row will have a set of ellipses in the cell for the Logs column. Tap this button to enter the grade segments for that tree row. The Grd column will have a picklist of values to choose from.



Tree Tab with Logs Column for Grading

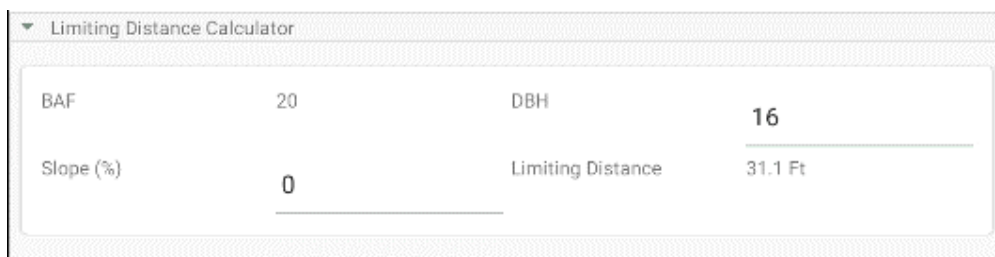


Tree Segment data entry

5.3.2 Limiting Distance Calculator

On Tree tabs for variable radius plots, a limiting distance calculator is displayed at the top of the tab for your convenience. The calculator is collapsed by default. Tapping on the arrow of the Limiting Distance Calculator pane will expand it. Tapping again will collapse the pane.

The BAF is automatically entered from the plot layer data. DBH will be automatically entered as the DBH value based on where your cursor currently is in the tree grid if you are checking a tree that has already been entered. You can also type in a DBH manually and add a slope correction as needed. The Limiting Distance (slope distance) will automatically be calculated and displayed for you.



Limiting Distance Calculator

5.3.3 Reorder Trees

Trees in the grid can be reordered if needed through a drag and drop operation. To reorder trees, you must enable reorder mode by tapping on the icon in the upper right corner of the grid. When reorder mode is active, the Delete trashcan icons are changed and the grid contents are greyed out. Editing while in reorder mode is not permitted.



Reorder disabled



Reorder enabled

To move a tree, first enable reorder mode. Then tap and hold on the tree row you wish to move. You will see the row “pop out” from the grid and is moveable. While continuing to hold down the row, drag your finger to the tree’s new position in the grid, then release your finger. Tap the reorder mode icon again to stop reorder mode and commit your change.

PlotID: 123469233 PlotSz: 20 BAF

Limiting Distance Calculator													
Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CrRa	Hlth	Hist	Op	Age	SgB	RdG
	LP-Lobl	PW-Pul	1	13.4	76		20-	Heε	1-Li	0-Fε			
	LP-Lobl	PW-Pul	1	7.3	54		20-	Heε	1-Li	0-Fε			
	LP-Lobl	AA-Autc	1	10	75	26	20-	Heε	1-Li	0-Fε			
	LP-Lobl	AA-Autc	1	8.1	75		10-	Heε	1-Li	0-Fε			
	LK-Lauri	AA-Autc	1	6.1	46		90-	Heε	1-Li	0-Fε			
	LP-Lobl	AA-Autc	1	11	78		20-	Heε	1-Li	0-Fε			
	LP-Lobl	PW-Pul	1	12.2	72		10-	Fus	1-Li	0-Fε			
	LK-Lauri	AA-Autc	1	5.2	30	20	30-	Heε	1-Li	0-Fε			

Moving a tree record

PlotID: 123469233 PlotSz: 20 BAF

Limiting Distance Calculator													
Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CrRa	Hlth	Hist	Op	Age	SgB	RdG
	LP-Lobl	PW-Pul	1	13.4	76		20-	Heε	1-Li	0-Fε			
	LP-Lobl	PW-Pul	1	7.3	54		20-	Heε	1-Li	0-Fε			
	LP-Lobl	AA-Autc	1	10	75	26	20-	Heε	1-Li	0-Fε			
	LP-Lobl	AA-Autc	1	8.1	75		10-	Heε	1-Li	0-Fε			
	LK-Lauri	AA-Autc	1	6.1	46		90-	Heε	1-Li	0-Fε			
	LK-Lauri	AA-Autc	1	5.2	30	20	30-	Heε	1-Li	0-Fε			
	LP-Lobl	AA-Autc	1	11	78		20-	Heε	1-Li	0-Fε			
	LP-Lobl	PW-Pul	1	12.2	72		10-	Fus	1-Li	0-Fε			

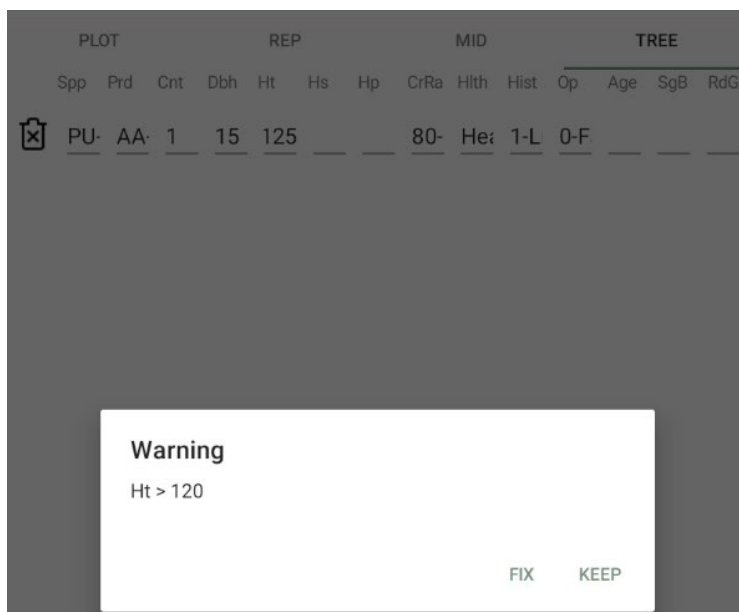
Reordered grid

5.4 Error Checking and Data Validation

SilvAssist Mobile has built-in robust error checking that greatly improves the accuracy of your data collection. On-screen prompts alert you to data entries that fall outside of expected boundaries as well as required fields. These error checks are configured during template configuration by the Administrator. When you tap Save to end your tally, your data is analyzed and checked against the established rules. An error check will appear for each instance of a data point that is out of bounds. They will continue to appear until all data is considered valid. Error checking is split into two general types: Hard errors and Soft errors. For a full list of error checks with descriptions for each inventory template, see Section 8.0.

5.4.1 Soft Error Checks

Soft error checks are for data that, while potentially valid, are outside of the expected range of value. In the example below, the upper limit for checking Total Height is 120 ft. but the input data is 125 ft. A soft error check serves as a reminder to verify your entry but will still allow you to continue and save the plot if you are sure your data is valid. Tapping Fix will return you to the grid view to edit data while tapping Keep will save the plot.



Soft Error Check

5.4.2 Hard Error Checks

A hard error check appears when input data contradicts data validation rules. These are values that must fit inside a defined expected range based on product specifications and business rules. A hard error check will force you to fix the data before being able to save the plot. Examples of this include mismatched product heights, DBH too small for the overstory plot, etc. In the example below, Total Height was recorded less than Merchantable Pulpwood Height. With a hard error check, your only option is to tap OK and fix your data.

PLOT			REP			MID			TREE				
Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CrRa	Hlth	Hist	Op	Age	SgB	RdG
<input checked="" type="checkbox"/>	PU	AA	1	15	80	85	80	He	1-L	0-F			

Error

When Ht > 0, Ht must be > Hp

OK

Hard Error Check

5.4.2 Conditional Error Checks

These error checks occur when data in one column is paired with another as a required data point. If you enter data in one of the columns, the app will alert you that the other data is required. For example, in entering a value for Age, you are also required to enter Single Bark Thickness (SgB) and Radial Growth (RdG). The example below shows an entry for Age but no values in the other two columns. The error check will appear until you have met the required data conditions.

PLOT			REP			MID			TREE				
Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CrRa	Hlth	Hist	Op	Age	SgB	RdG
<input checked="" type="checkbox"/>	PU	AA	1	15	80		80	He	1-L	0-F	50		

Error

Radial growth is required with age

OK

Conditional Error Check

PLOT			REP			MID			TREE				
Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CrRa	Hlth	Hist	Op	Age	SgB	RdG
<input checked="" type="checkbox"/>	PU	AA	1	15	80		80	He	1-L	0-F	50		0.5

Error

Single bark is required with radial growth

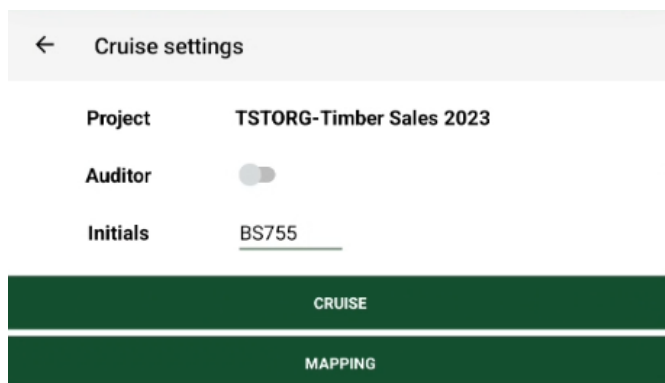
OK

Conditional Error Check Cont'd

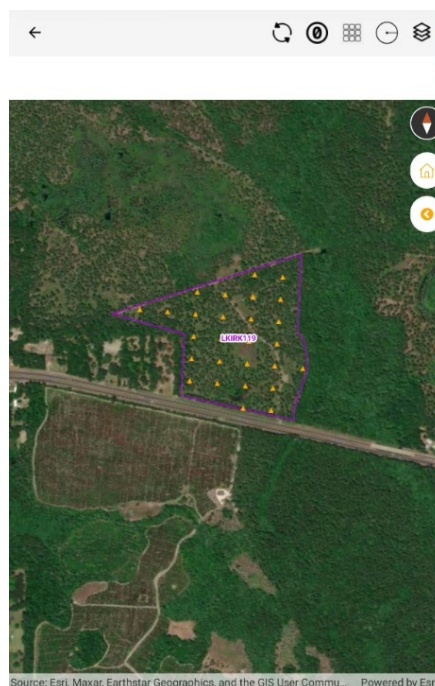
6.0 MAPPING PAGE

6.0 MAPPING PAGE

If the mobile plot allocator is enabled for your project, a Mapping button will be displayed on the Cruise Settings page. Tapping this button will take you to the mobile plot allocator map page which will allow you to allocate plots in stands and change the plot sizes for all plots in a stand. The layout and function of the Mobile Plot Allocator Map is very similar to the Cruise Map



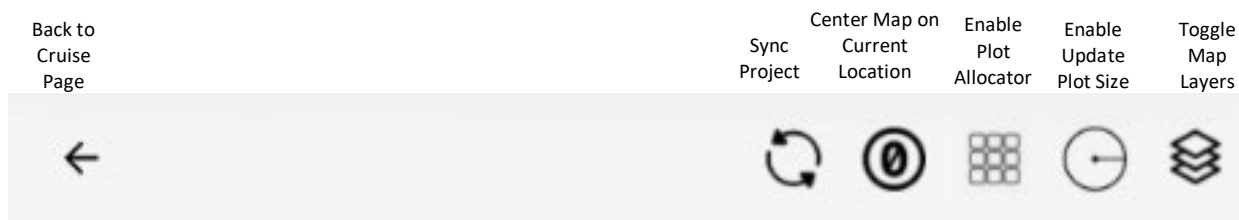
Cruise Settings page with Mapping button



Mobile Plot Allocator Map

6.1 Mapping Page Header Buttons

The Map Header Button panel contains several important buttons for map display, navigation, and features. The buttons on this panel include Back to Cruise Page, Sync Project, Center Map on Current Location, Toggle Map Layers, Enable Plot Allocator, and Enable Update Plot Size. In the following sections we will highlight the 2 that are new from the Cruise Map page, Enable Plot Allocator and Enable Update Plot Size.

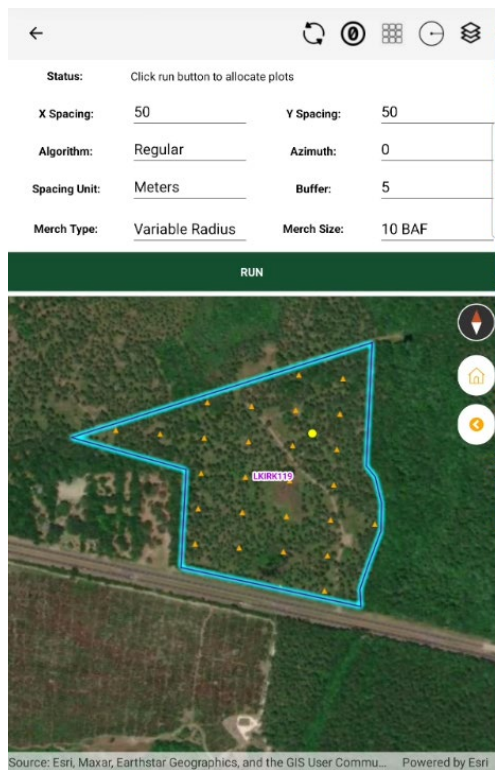


Mobile Plot Allocator Map Header Buttons

6.1.1 Plot Allocator



To create a plot grid, tap on the enable plot allocator button and select a stand polygon on the map. This will bring up the Settings window for the allocation.

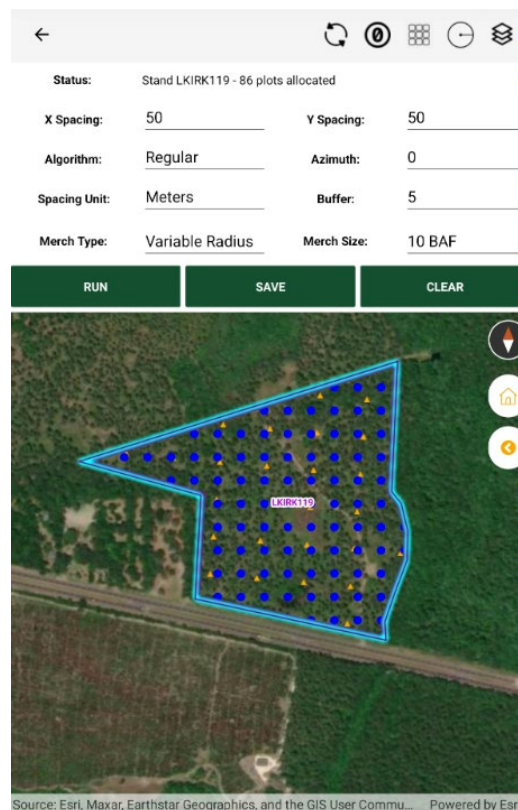


Mobile Plot Allocator Settings

After all settings are specified, a Run button will appear. When Run is tapped, a preview of the plot grid will appear in the map, represented by blue dots. From here you can either: change the settings and re-run the allocation, save the current allocation, or clear the current allocation. Selecting Save will apply the grid and the symbology will change to the default Unvisited plot symbol. At this point you can return to the Cruise page, enter the map and begin data collection on these new plots.

The allocator settings are:

- X (horizontal) and Y (vertical) spacing for the grid. Units are as defined in Spacing Unit option
- Algorithm – grid design type. Currently only “Regular” which is X,Y defined spacing.
- Azimuth – the orientation of the grid lines in degrees
- Spacing Unit – plot X,Y spacing as Meters, Feet, or Chains
- Buffer – distance in meters to offset or push the plot grid further inside the stand polygon boundary
- Plot Type and Size - The final settings will be for the plot types and sizes for the stand. The available options are pre-defined picklists set up during project template creation.

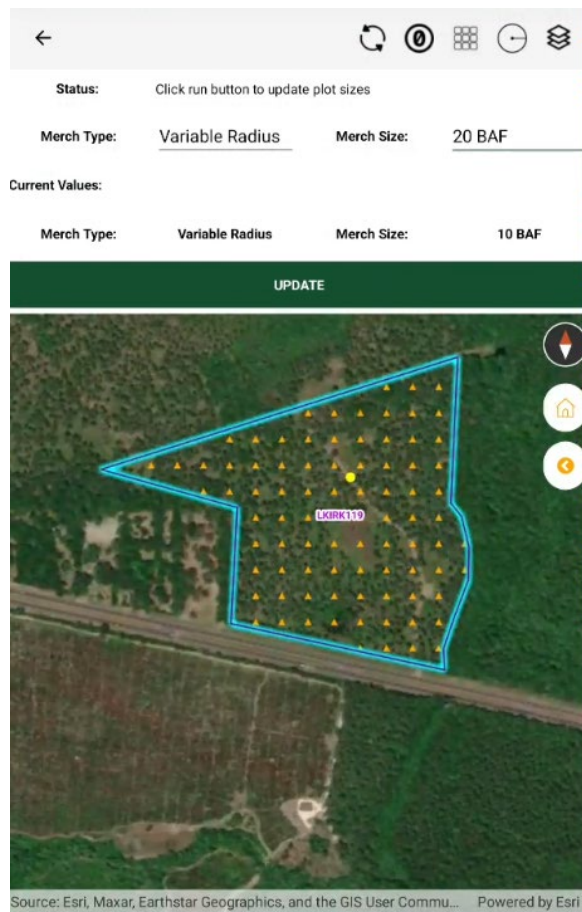


Plot Grid Preview

6.1.2 Update Plot Size



The Update Plot Size tool is used to change the plot size(s) for all plots in a stand. All plots in the stand must be unvisited for this tool to be enabled. Tap on the icon to toggle the tool and then select a stand polygon on the map.



Update Plot Sizes

A settings window will appear with parameters for changing plot sizes. The selected stand's plot size(s) will be displayed. You can change any of the plot types and sizes for all plots in the stand. All plot types and sizes will need to be set even if they are not changing for the Update button to be visible. The available options are pre-defined picklists set up during project template creation.

6.2 App Linking with Esri's ArcGIS Field Maps

By utilizing a properly configured ArcGIS Online web map, you can use ArcGIS Field Maps application to send a stand polygon directly to a SilvAssist Mobile project entirely offline via a quick button link. Once the stand is imported, you can then use the plot allocator and apply a plot grid to this polygon. From there, you can go straight to i

To begin, ensure that F4 Tech has provided you or your organization with the proper configuration for the web map. The stand import will not work otherwise. You should also have the project you intend to copy the stand to already downloaded within SilvAssist.

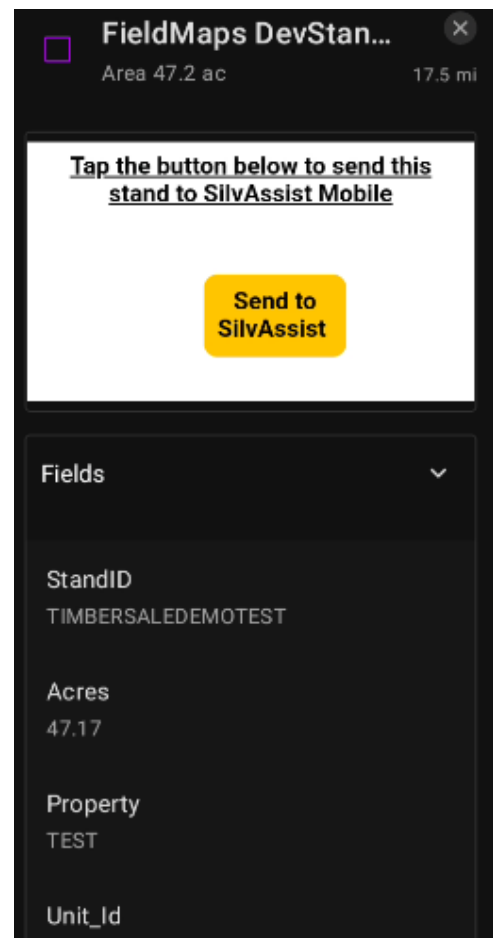
In Field Maps

Draw your stand feature in Field Maps either by using the GPS to track your location or by placing vertices manually. When finished, tap the polygon to display the attribute pane if it's not already open.

You may fill out any of the attributes present but there are three main attributes to keep in mind: StandID, Property, and ProjectId. Property and ProjectId may be populated here if you know the values. If not, they will be selected during the import in the next step.

You **must** enter a unique StandID for the project you wish to import into. If the StandID is not unique, SilvAssist Mobile will display an error message and you will need to return back to Field Maps to try again. Any attributes you apply in Field Maps will be saved and synced to the SilvAssist database.

When you are satisfied with the stand attributes, click the "Send to SilvAssist" button at the top of the pane. SilvAssist will open and prompt you for some more information.



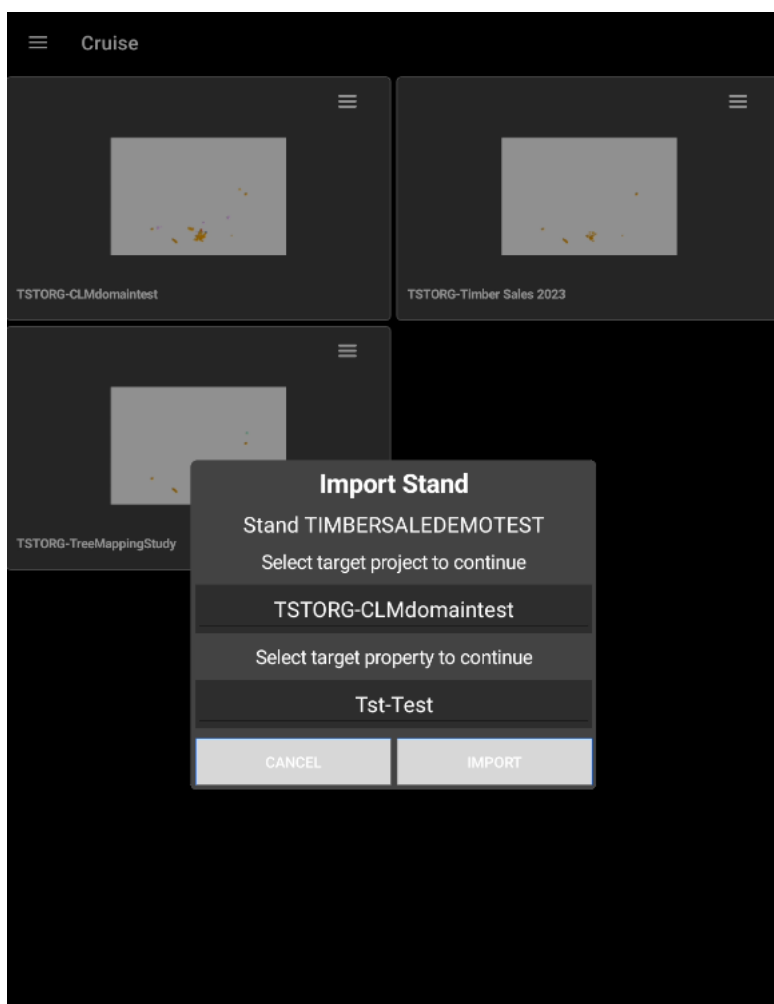
Attributes and Send to SilvAssist

In SilvAssist Mobile

After you press the Send to SilvAssist button in Field Maps, SilvAssist Mobile will automatically open and you will be presented with the Import Stand screen. This window contains two menus: Target Project and Target Property.

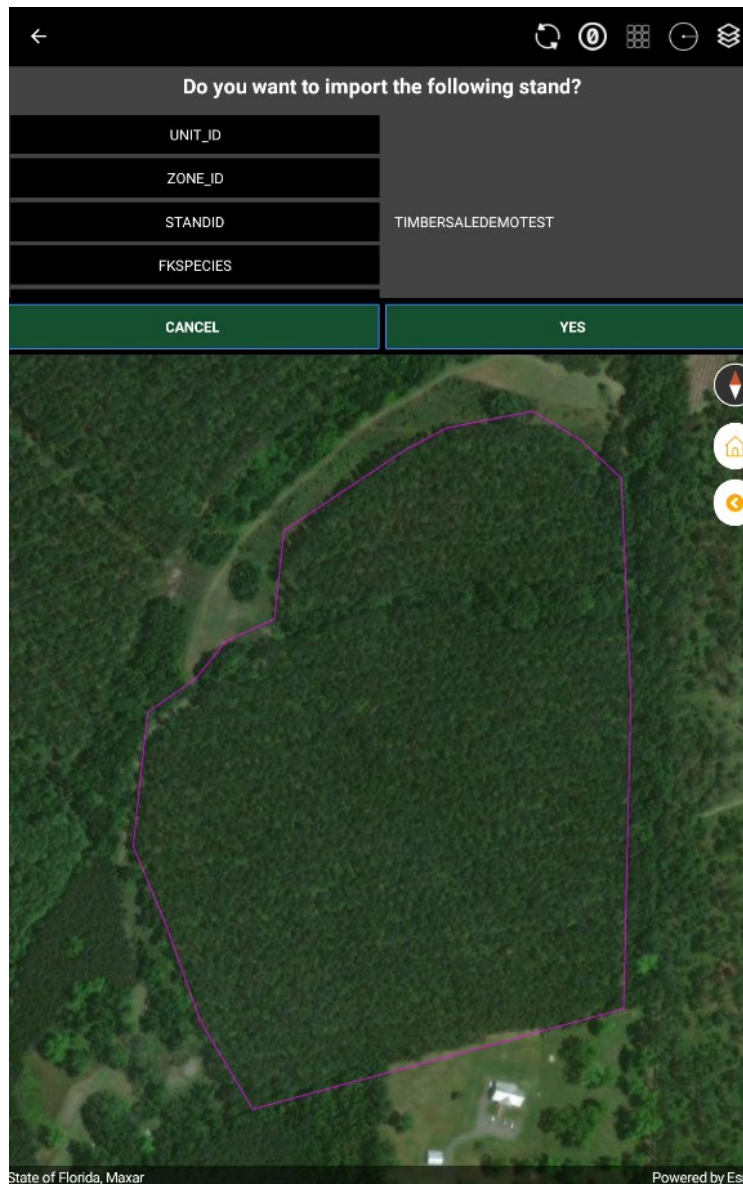
Target Project will display a list of all projects currently downloaded to your device. Target Property will display all properties currently assigned to your user name. Select your desired values from each menu and then tap the Import button.

By setting values here, ProjectID and Property will be automatically applied in the stand attributes. If you have values already present here from Field Maps, any values you input here will overwrite those previously entered values. A warning message will appear if you are about to overwrite values.



Import Stand

After tapping the import button, the following screen will appear:



Import confirmation

Here you will be able to preview your stand on the map as well as an attribute pane. Scroll through the attributes to review. If you are satisfied with everything, tap Yes to proceed. The import procedure will be finished and you can proceed to plot allocation as described in section 6.0.2.

7.0 ADDITIONAL COMPONENTS

7.0 ADDITIONAL COMPONENTS

7.1 Auditing

SilvAssist Mobile has built-in audit capabilities. The auditing procedure is nearly identical to the regular data collection process. The only difference is that to audit, you must toggle on the Auditor button on the Cruise Settings page (see 4.2.1) and your Cruiser ID must be configured as an auditor. Once this has occurred and you are on the map, simply navigate to the audit plot and review/collect the plot data.

“Hot” auditing is also possible if the auditor and cruiser are working together on the same device. The cruiser will need to back out of the map to the Cruise Page and the auditor will then re-select the project, toggling on Auditor mode and selecting their ID.

7.2 TPKs

Tile Packages (or TPKs) are Esri basemap files that are pre-packaged for use on offline devices. These files are created in ArcGIS products or by using an Esri app called Tile Package Kreator. Typically, these files will be provided to you by the Administrator.

To add TPKs to a project you will need to manually move the file into the project folder on your device. This can be done using a cabled computer connection (File Explorer for Android, iTunes for iOS) or by direct download to the device via a cloud storage app. You can transfer the TPK directly into the project folder (see below) from the computer or move it to the folder via a file explorer on the device. Some older Android file explorer apps will not properly allow access to the folder needed. We recommend the free Cx File Explorer app for Android. For iOS the built in Files app is fine.

Regardless the method of transfer, the TPK will need to be placed into the folder shown below, depending on your operating system:

Android: Main Storage\Android\data\com.f4tech.silvassistmobile\files\F4Tech\[Project Name folder].

iOS: On My iPad\SilvAssistMobile\F4Tech\[Project Name folder]
(or: On My iPhone)

For example, if you were loading a TPK for a project named “Smith Timber Sale,” you would put the TPK directly into the “Smith Timber Sale” folder in the directory above.

Now when you relaunch SilvAssist Mobile and go to the map for that project, you will see the TPK as your basemap. This will also enable to toggle the Stands layer.

8.0 TROUBLESHOOTING

8.0 TROUBLESHOOTING

Many issues can be resolved by force closing the app completely. This can be done by opening the Recent Apps screen on your device and swiping away SilvAssist Mobile.

Category	Issue	Solution
Authentication	“Invalid user/password” on Log In	Verify you have the correct server selected and have typed in your credentials correctly
Navigation	My location dot is greyed out	Verify your device’s location services are turned on and relaunch the app
Syncing	“Sync requires a network connection”	Verify you have Wi-Fi turned on and have a strong Internet connection
Syncing or Saving a Plot	“Attempt to write to a read only database”	Close the app completely. Restart your device and try again
Data collection	“Attempt to use functionality that is not supported for the current license level”	Connect to Internet, then close the app completely. Reopen SilvAssist while still connected to the internet. This error can also be remedied by performing a sync from the Cruise page.

To contact support:

Email: support@thinkf4.com

Phone: 850-385-3667

9.0 APPENDICES

9.0 APPENDICES

The appendices in this section are examples of typical template configurations for a timber sale and a seedling survival inventory. Actual template design will vary based on organization.

9.1 Sample Timber Sales Template Detail

The Timber Sales project is to collect forest inventory on a timber sale stand. It contains 2 tabs as described below:

9.1.1 Plot Tab

The Plot tab contains StandID, PlotID, Plot size, and a comments field. Tap on the entry line beneath the word Comments to bring up the keyboard and type any notation you need to make. This field allows for a maximum of 255 characters

PLOT	TREE
PlotID: 123478855	
StandID	CCCAA00703_Updated
PlotID	123478855
OverPlotSz	20-20 BAF
Comments	

Timber Sales Plot Tab

9.1.2 Tree Tab

The Tree, or Overstory, Tab is for collecting overstory subplot data. It contains eight fields for each record: Species (Spp), Product (Prd), Count (Cnt), Diameter (Dbh), Total Height (Ht), Sawtimber Height (Hs), Pulpwood Height (Hp), and Cut vs. Leave (CutLv). Tap Add Tree at the bottom of the screen to add a new line.

As defaults, Prd is AA-AutoAssign, Cnt is 1, and CutLv is Cut. You can change the values of any of these defaults by tapping on the record in the grid. Cnt, Dbh, Ht, Hs, and Hp are numeric fields that will bring up a number keyboard for you to enter data. The remaining fields are picklists that are shown below. Tap on the trashcan icon to delete a record.

PLOT		TREE						
PlotID: 123478855		PlotSz: 20 BAF						
▶ Limiting Distance Calculator								
	Spp	Prd	Cnt	Dbh	Ht	Hs	Hp	CutLv
	SA	AA	1	13.2	88			Cut
	SA	AA	1	12.5	85			Cut
	SA	AA	1	13.3	90			Cut
	SA	AA	1	10.4	88			Cut

Timber Sales Tree Tab

LL-Longleaf Pine

LP-Loblolly Pine

PD-Pond Pine

AA-AutoAssign

Cut-Cut

PU-Sand Pine

PW-Pulpwood

Leave-Leave

SA-Slash Pine

SP-Shortleaf Pine

CULL-Cull

Cut vs Leave List

SR-Spruce Pine

DD-Dead

SSL-South Florida Slash

Product List

BY-Bald Cypress

PC-Pond Cypress

JU-Cedar Spp

OS-Other Softwoods

AB-American Beech

Partial Species List

9.1.3 Timber Sales Template Error Checks

The table below lists the error checks in this template per tab. The error message displayed on the device is provided along with a description of what the check is and whether or not the check is a soft error.

Tab	Error Message	Error Description	Soft Edit?
Tree	When Ht>0, Ht must be >Hp	When total height is greater than zero, that value must be greater than pulpwood height	No
Tree	When Hp>0, Hp must be > Hs	When pulpwood height is greater than zero, that value must be greater than sawtimber height	No
Tree	When Ht>0, Ht must be >Hs	When total height is greater than zero, that value must be greater than sawtimber height	No
Tree	Dbh >60	Warning that Dbh is greater than 60"	Yes
Tree	Ht >120	Warning that total height is greater than 120 ft.	Yes
Tree	Cnt on merch trees must be >=1	Tree count cannot be 0 or blank	No
Tree	Cnt on merch trees >2	Warning that tree count is greater than 2	Yes
Tree	Merch pine dbh must be >=4.6	Trees on Tree plot with Pine species code must have Dbh be greater than or equal to 4.6"	No
Tree	Merch hdwd, cypress, & cedar dbh must be >=5.1	Trees on Tree plot with Hardwood, Cypress, and Cedar species code must have Dbh be greater than or equal to 5.1"	No
Tree	CrRa must be > 0 for live trees (Hist=1)	Crown ratio field cannot be left blank	No
Tree	Ht must be >0 for live trees (Hist=1)	Total height is required on all live trees	No
Tree	Ht can't be null for live trees (Hist=1)	Total height is required on all live trees	No
Tree	When Hs>0, Hs must be >=16 for SW	Merch. Sawtimber height must be greater than or equal to 16 ft.	No
Tree	When Hp>0, Hp must be >=16 for PW & AA	Merch. Pulpwood height must be greater than or equal to 16 ft.	No
Tree	When Hs>0, Hs must be >=24 for CNS	Merch. CNS height must be greater than or equal to 24 ft.	No

9.2 Sample Planting-Seedling Survival Template Detail

The Planting-Seedling Survival project is to collect survival data on a recent reforestation stand. It contains 2 tabs as described below:

9.2.1 Plot Tab

The Plot tab contains StandID, PlotID, Plot size, and a comments field. Tap on the entry line beneath the word Comments to bring up the keyboard and type any notation you need to make. This field allows for a maximum of 255 characters

PLOT	REP
PlotID: 123476465	
StandID	THSFHB1108
PlotID	123476465
RpPlotSz	0.025
Comments	

Planting-Seedling Survival Plot Tab

9.2.2 Rep Tab

The Rep, or Reproduction, Tab is for collecting the reforestation data. It contains two fields for each record: Species (Spp) and Count (Cnt). Tap Add Tree at the bottom of the screen to add a new line. Then tap on the entry line below Spp to bring up the species pick list. The Cnt field defaults to a value of 1 but you can change this by tapping on the entry line below Cnt, bringing up the keyboard, and replace with the number you need. Tap on the trashcan icon to delete a record.

PLOT	REP
PlotID: 123476465 PlotSz: 1/40th Ac PlotRad: 18.6 ft	
Spp	Cnt
LL	17

Planting-Seedling Survival Rep Tab

LL-Longleaf Pine
 LP-Loblolly Pine
 PD-Pond Pine
 PU-Sand Pine
 SA-Slash Pine
 SP-Shortleaf Pine
 SR-Spruce Pine
 SSL-South Florida Slash
 BY-Bald Cypress
 PC-Pond Cypress
 JU-Cedar Spp
 OS-Other Softwoods
 AB-American Beech

Partial Species List

9.2.3 Planting-Seedling Survival Template Error Checks

The table below lists the error checks in this template per tab. The error message displayed on the device is provided along with a description of what the check is and whether or not the check is a soft error.

Tab	Error Message	Error Description	Soft Edit?
Rep	Repro cnt must be >=1	Tree count cannot be 0 or blank	No
Rep	Repro cnt > 50	Warning that count is greater than 50	Yes