

SMART Mobile User Manual



Zoological Society of London

Purpose

The purpose of this training resource is to provide a guide on how to configure SMART Mobile and use it to collect field data. The intended target groups for training are field rangers, other frontline staff and ecological monitoring staff who work on site in terrestrial and marine protected areas, community conservancies, private reserves and other conservation areas.

Acknowledgements

The training handbook was prepared by the SMART Training Taskforce, a group of dedicated SMART users who work broadly across geographic regions, sites and situations where SMART is being implemented, in terrestrial and marine environments. The Training Taskforce is one working group under the SMART Partnership which currently comprises the following organizations: Frankfurt Zoological, Global Wildlife Conservation, North Carolina Zoo, Panthera, Peace Parks, Wildlife Protection Solutions, WCS, WWF, and ZSL.

Overview

This training resource covers the practical aspects of field data collection using patrol forms, navigation using GPS, data

recording on handheld devices using SMART Mobile in conjunction with configured data models, and data upload to SMART. The section of the handbook discusses the installation and configuration of SMART Mobile. The second section covers data capture in the field. The final section covers troubleshooting and frequently asked questions.

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1. Introduction

This manual describes the functions and usage of the SMART Mobile software application.

The intended audience is users of the SMART Desktop application who are configuring field data collection. Field users or rangers may also use this manual to understand the various configurations and how they function.

The manual does not describe the SMART Desktop application, although it may make reference to various desktop configuration options. Readers are encouraged to learn the desktop application before reading this manual.

1.1. What is SMART Mobile?

SMART Mobile is a mobile phone application that is used by rangers to capture data from the field.

The SMART Desktop application defines the data model and SMART Mobile uses this definition to prompt the rangers to collect data.

Rangers capture data and then download it into SMART Desktop for reporting and analysis.

1.2. Related resources

1.2.1. RESOURCE LIBRARY

SMART Conservation Tools maintain a resource library: <https://smartconservationtools.org/Resources/Resource-library>

This includes many documents and guides for leveraging and extending SMART features. Readers are encouraged to use the library to grasp the core concepts ahead of using this manual. For example, a Patrol is a set of related observations and attributes. This term will be used through the manual.

1.2.2. COMMUNITY FORUM

There is a moderated community forum which is responsive to questions and comments:

<https://forum.smartconservationtools.org/>

When reporting an issue, it is very helpful to attach a [bug report](#).

1.2.3. TUTORIAL VIDEOS AND MORE

Additional resources related to SMART Mobile may be found here: <https://cybertrackerwiki.org/smart/>

2. Demo of SMART Mobile in action

This section describes how to quickly see SMART Mobile in action. The idea is to try it out on an Android or iOS device and help to create an understanding of what it is by example.

This is a disconnected example, so do not capture important data. This demo requires an iOS or Android device with internet access.

2.1. Get SMART Mobile

Search for and install "SMART Mobile for Conservation":

iOS AppStore: <https://apps.apple.com/us/app/smart-mobile-for-conservation/id1546455676?platform=iphone>

Android Play Store: <https://play.google.com/store/apps/details?id=org.cybertracker.mobile.sm&gl=US>

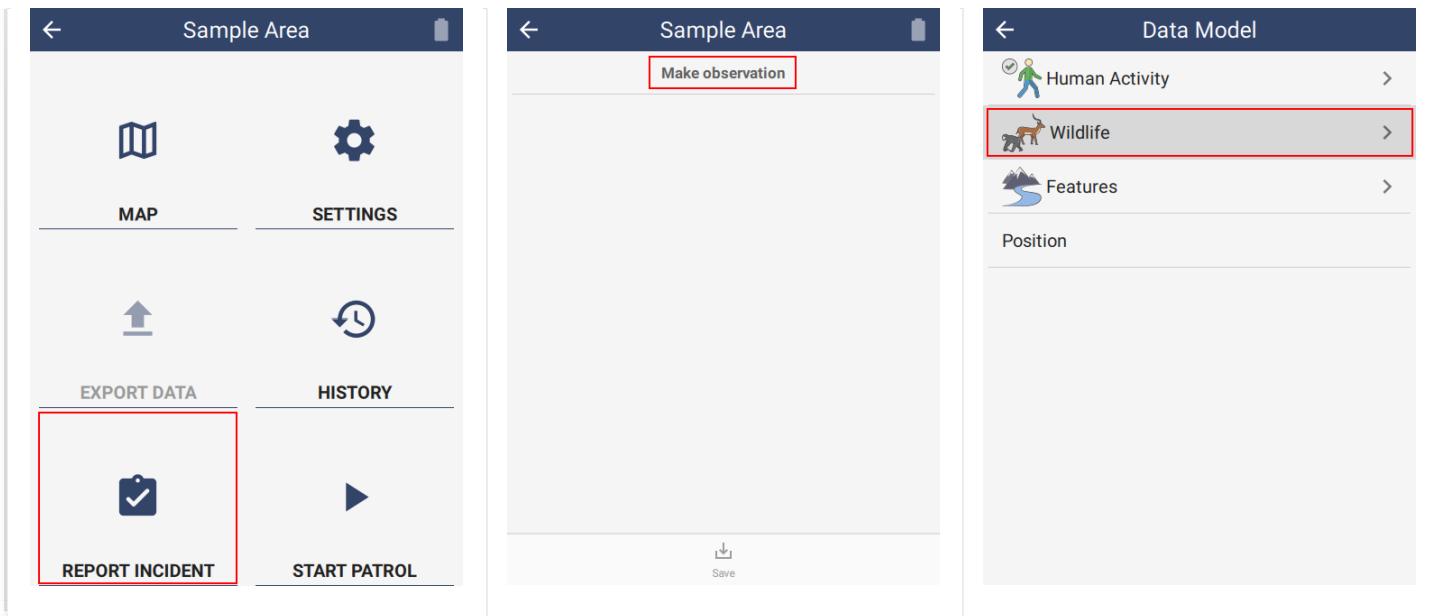
2.2. Connect to a SMART Package

Scan the following QR Code on your phone. It will download and install a sample package into SMART Mobile.

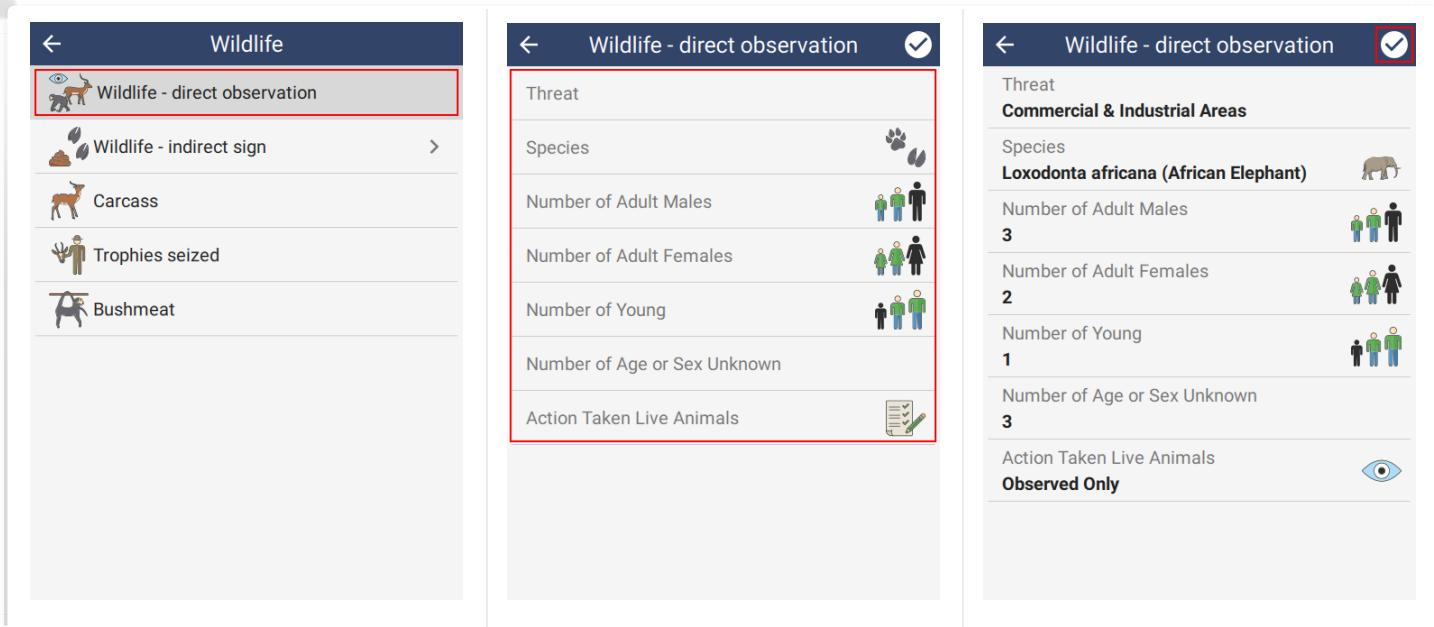


2.3. Capture data

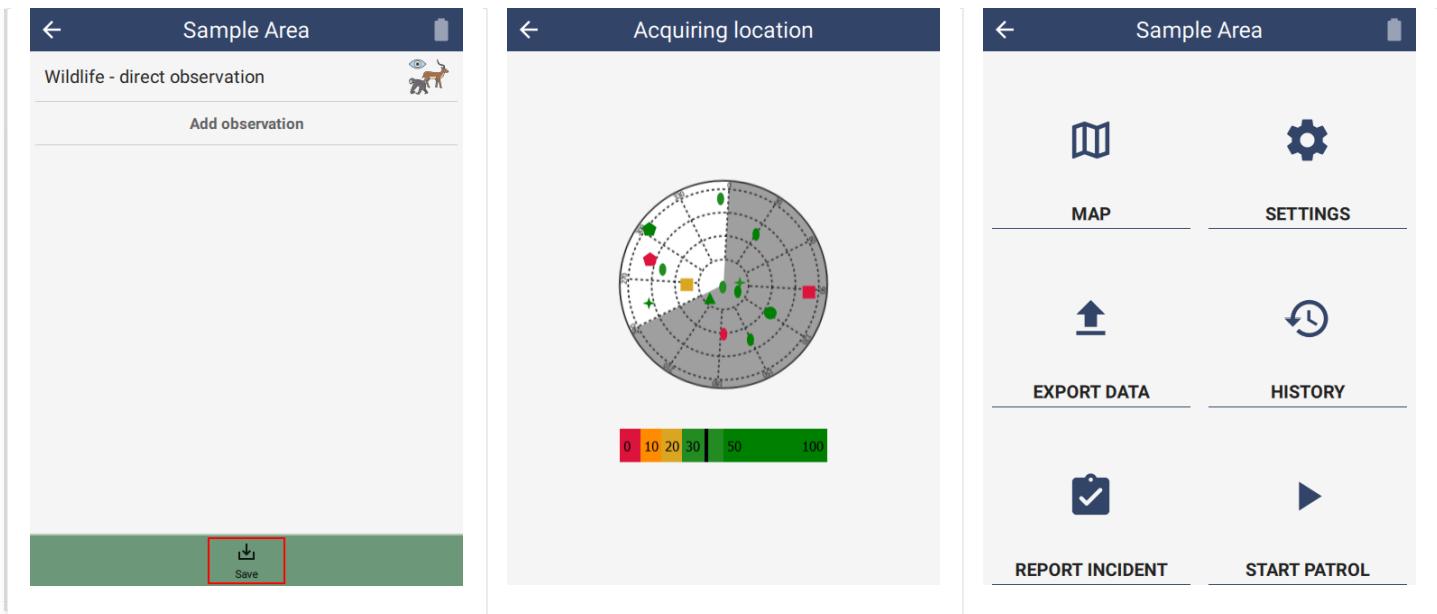
Tap **REPORT INCIDENT, Make observation, Wildlife**



Tap **Wildlife - direct observation**, then try tapping on some of the options and entering data.



Tap the icon in the top right corner. Then tap the **Save** button at the bottom.



2.4. Summary

The example shows how to acquire SMART Mobile and use it to capture a single observation. There are many options and configurations available and these will be explored in later sections.

3. Installation

SMART Mobile is a software application and therefore must be installed before use. There are several ways of doing this and the choice depends on the scenario and requirements. Each approach has advantages and limitations.

3.1. Supported operating systems

SMART Mobile is supported on Android, iOS and Windows Desktop. The latest version of each platform is recommended, but older versions are supported.

iOS requires version 14 or higher.

Android requires version 6 (Marshmallow) or higher. It is recommended that testing is conducted on a device prior to purchasing a larger number of devices. Strength of GPS signal, battery life and other attributes vary substantially from one manufacturer to the next.

Windows Desktop running Windows 10 or higher. This version is maintained for training purposes only and is not supported as a way to capture field data.

3.2. Apple AppStore

SMART Mobile is available on the Apple AppStore by searching for "SMART Mobile for Conservation" or the link:
<https://apps.apple.com/us/app/smart-mobile-for-conservation/id1546455676?platform=iphone>

This version will be routinely updated to resolve issues and add new features.

Limitations:

- SMART Connect is required as there is no support for USB cable transfer
- Kiosk mode is not supported on iOS.

3.3. Android Play Store

SMART Mobile is available on the Google Play Store by searching for "SMART Mobile for Conservation" or the link:
<https://play.google.com/store/apps/details?id=org.cybertracker.mobile.sm&gl=US>

This version will be routinely updated to resolve issues and add new features.

Limitations:

- Kiosk mode is not supported on this version. Use the APK version if kiosk mode is required.

3.4. Android APK

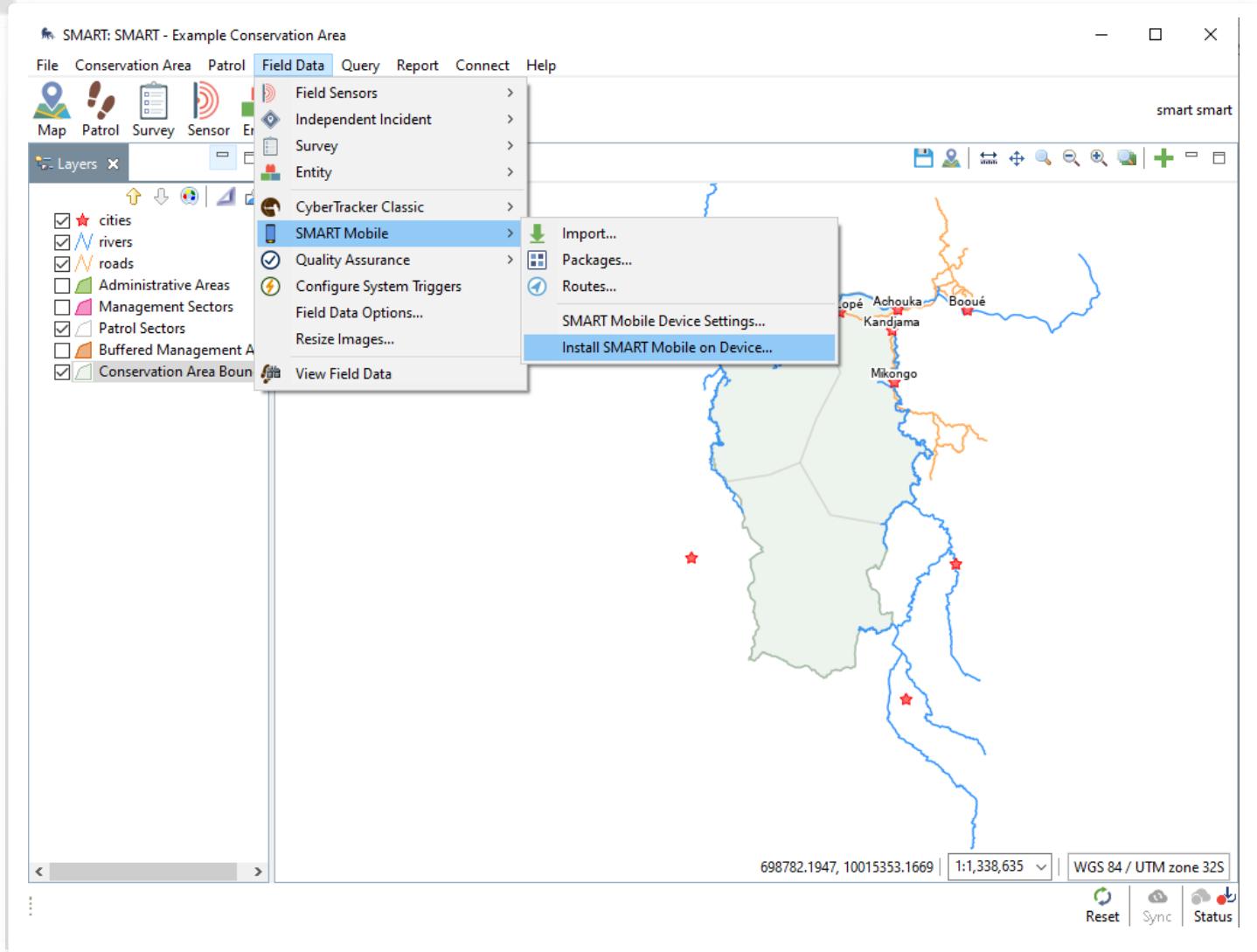
SMART Mobile can be installed directly onto an Android using an APK. An APK is a single file that holds an Android application.

The APK file for SMART Mobile is available for download from the Download option on the SMART Conservation Tools website: <https://smartconservationtools.org/>.

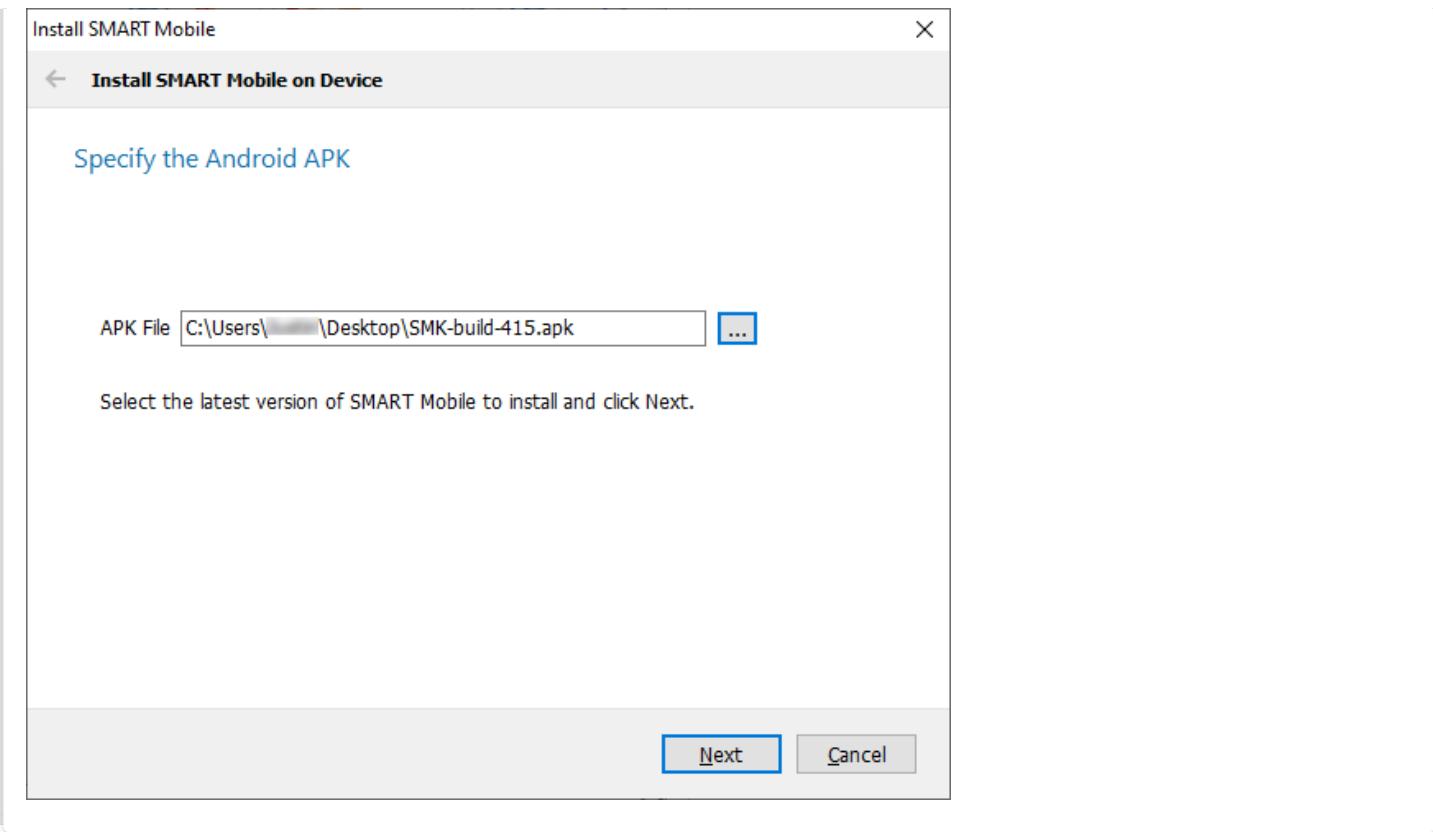
Limitations:

- Updates will not be automatic.
- Updates will require repeating the installation process with a new APK.

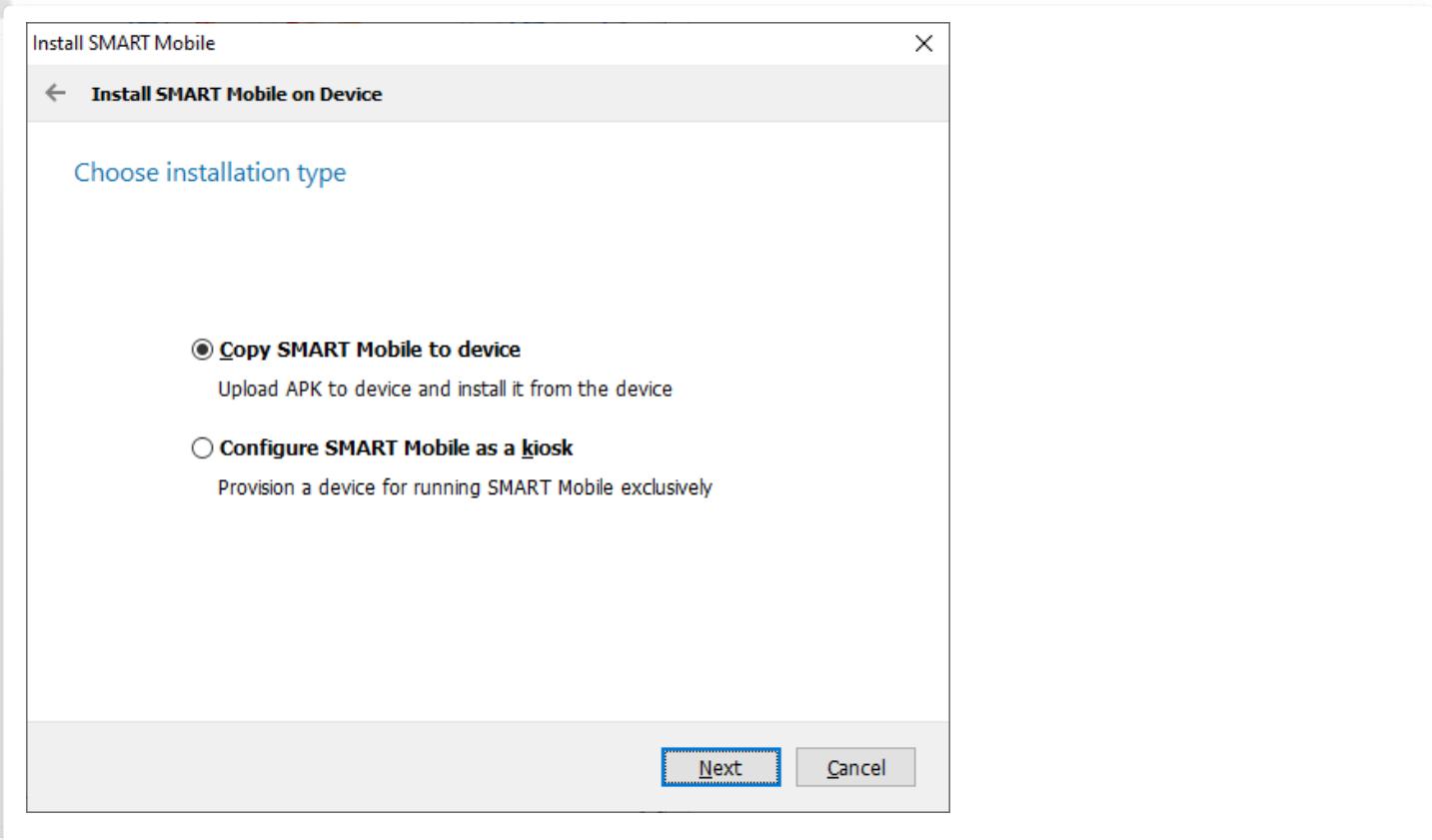
To start, select **Install SMART Mobile on Device...** from the **Field Data** menu and **SMART Mobile** submenu:



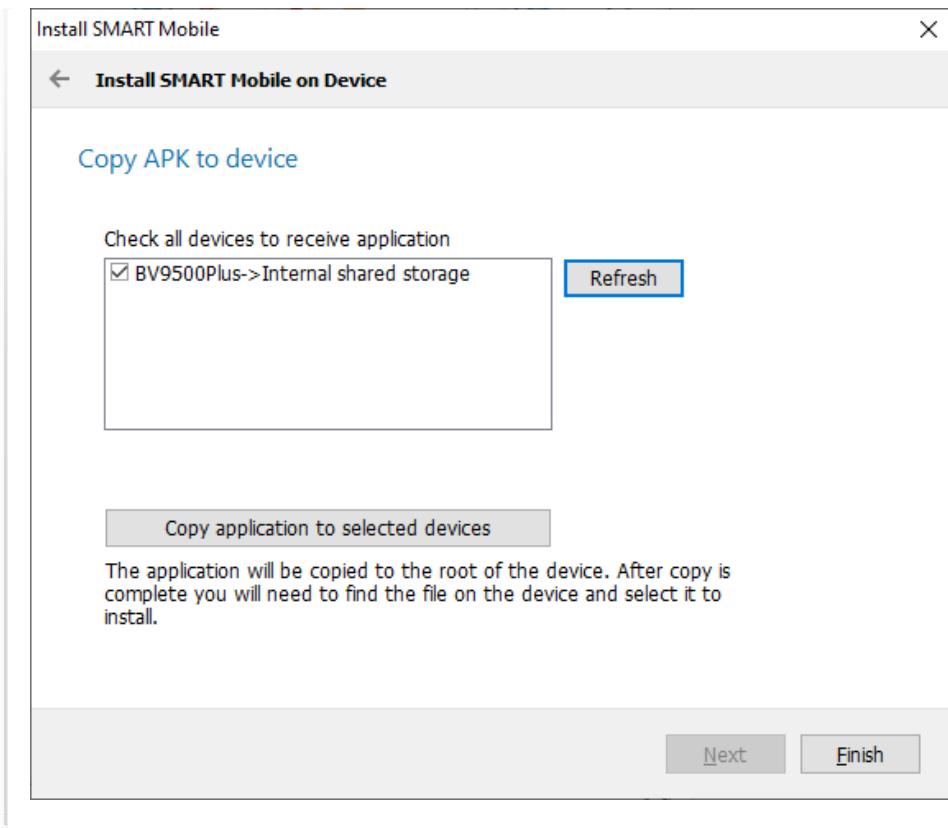
Use the '...' button and select the APK file from the file system and click **Next**:



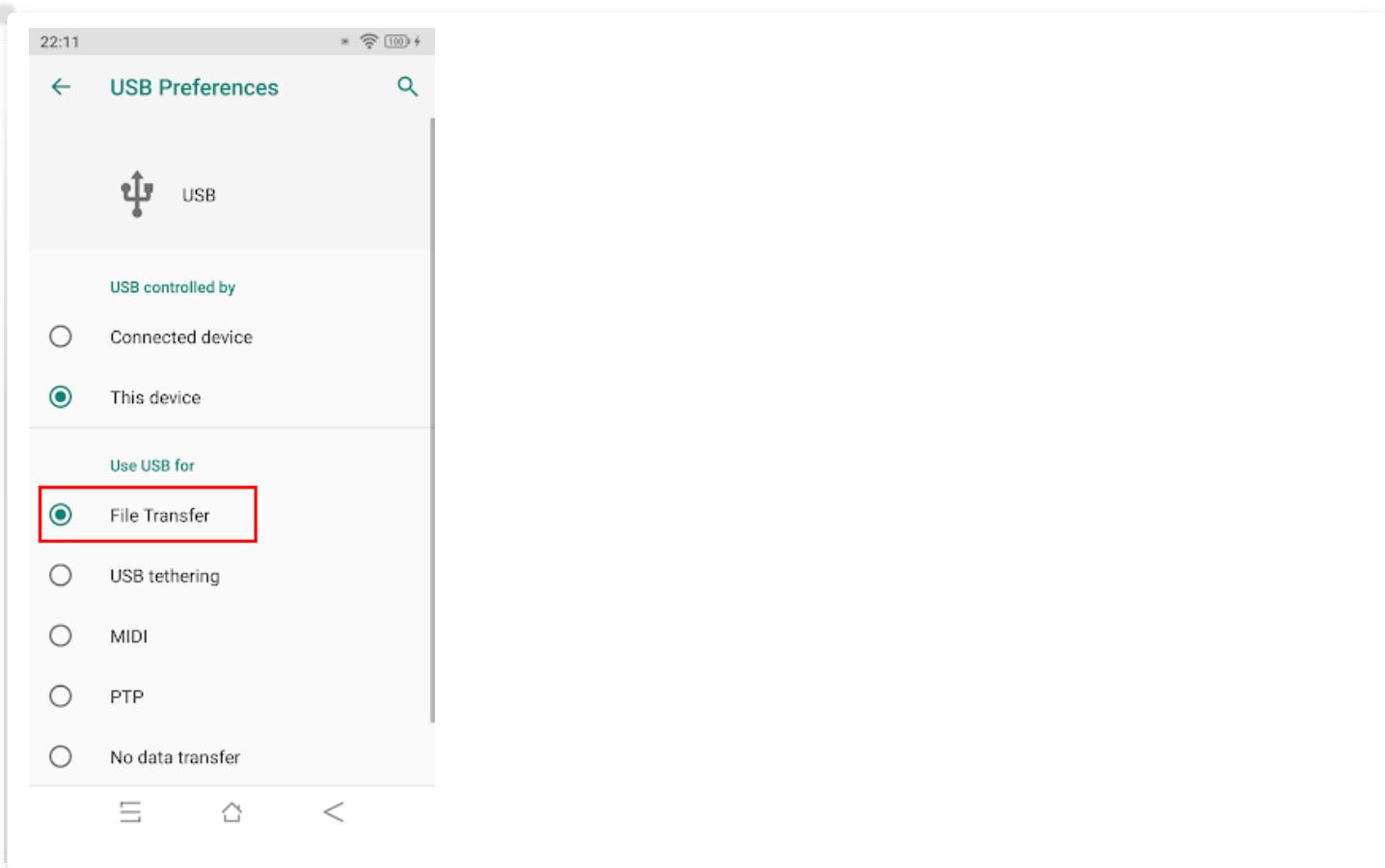
Then select **Copy SMART Mobile to device** and click **Next**:



Select the device to copy SMART Mobile to and then click **Copy application to selected devices**. Devices will have more than one entry if they have an additional SD card. There is no harm in selecting all of them.



If the device does not show up in the list, make sure the USB cable is connected to your PC and that the USB mode on the device is set to **File Transfer**:

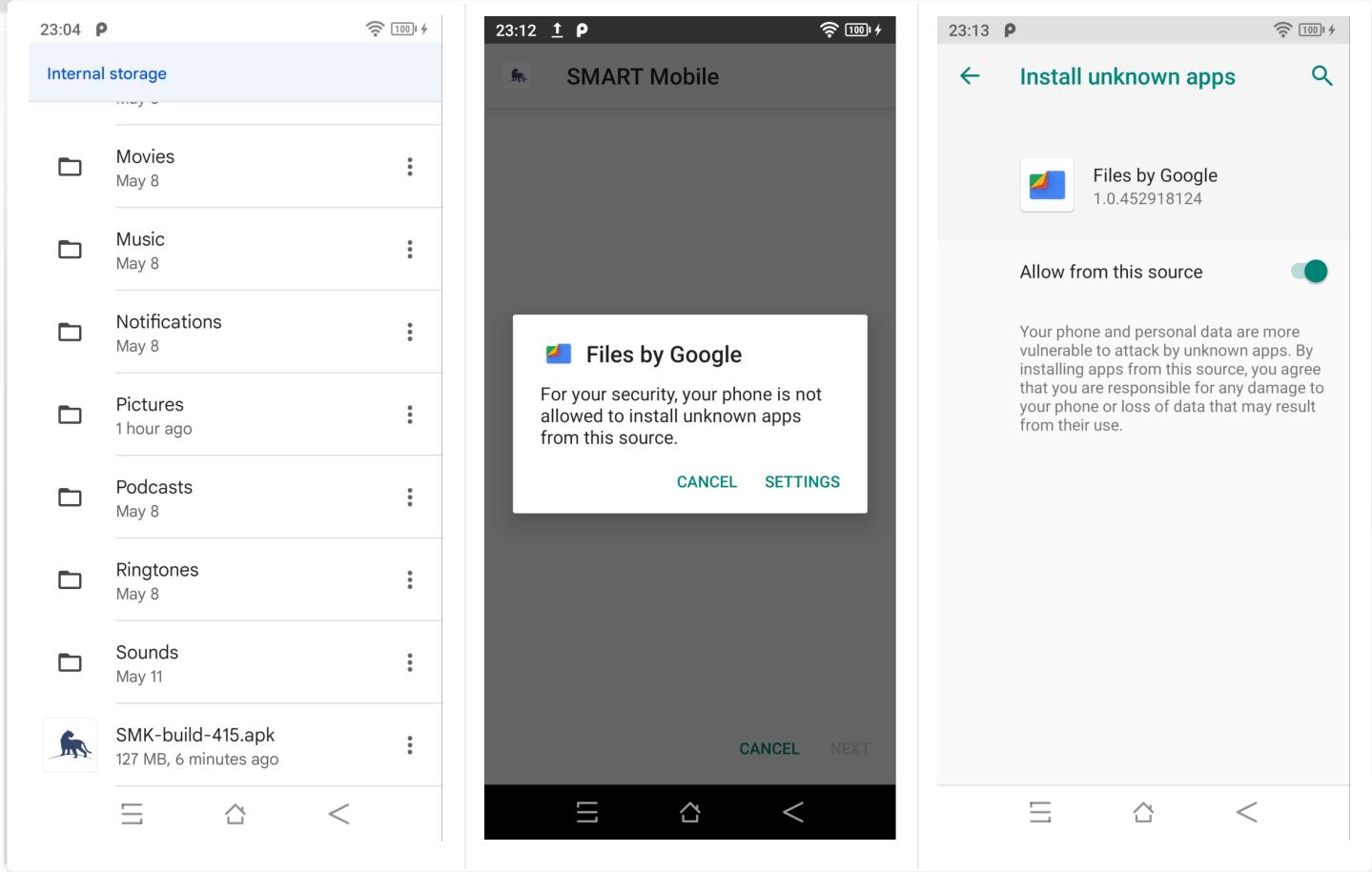


Clicking **Refresh** will retry the connection.

Note that this can be used to copy to several devices, just plug in a new device and repeat the process (**Refresh** then **Copy**).

Next open the Files viewer application on the device and navigate to the Internal Storage folder and find the APK. Then tap on it to install it.

A prompt may appear to allow installation of apps from unknown sources. If so, choose **Settings** and then enable **Allow from this source**:

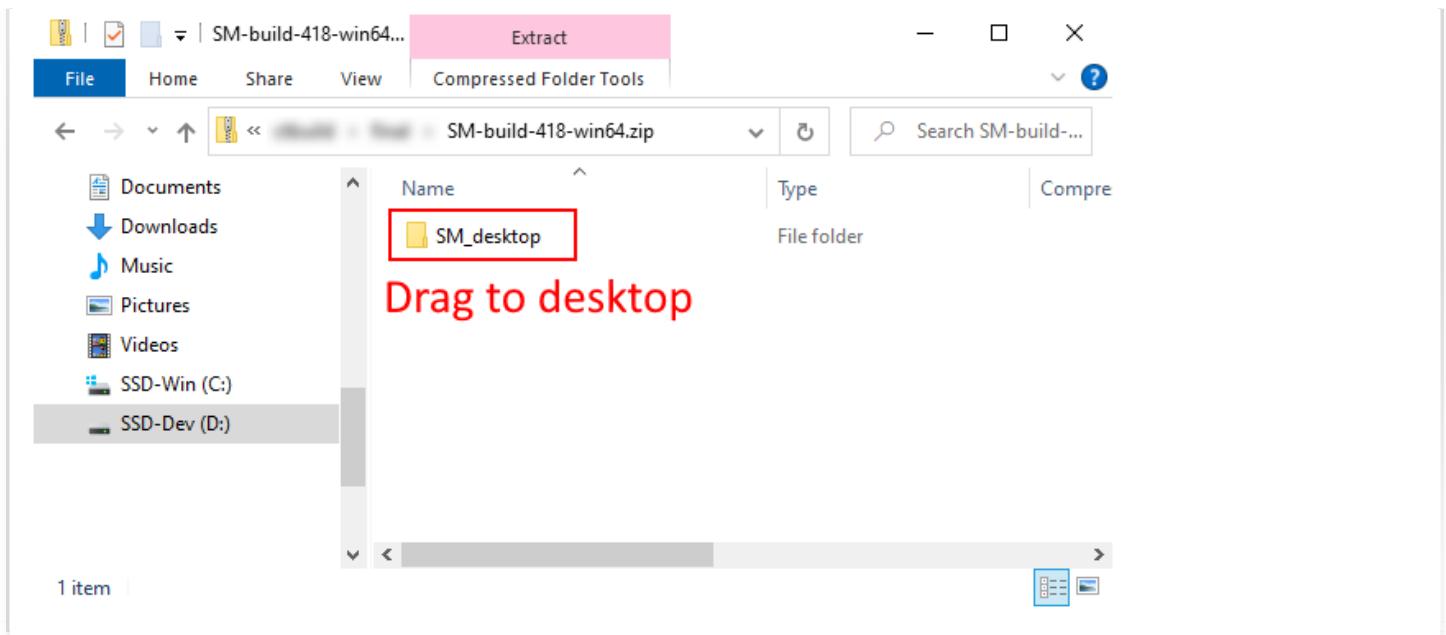


When running SMART Mobile for the first time, a prompt will appear to switch your Android home launcher app to SMART Mobile. Do not switch the launcher to SMART Mobile.

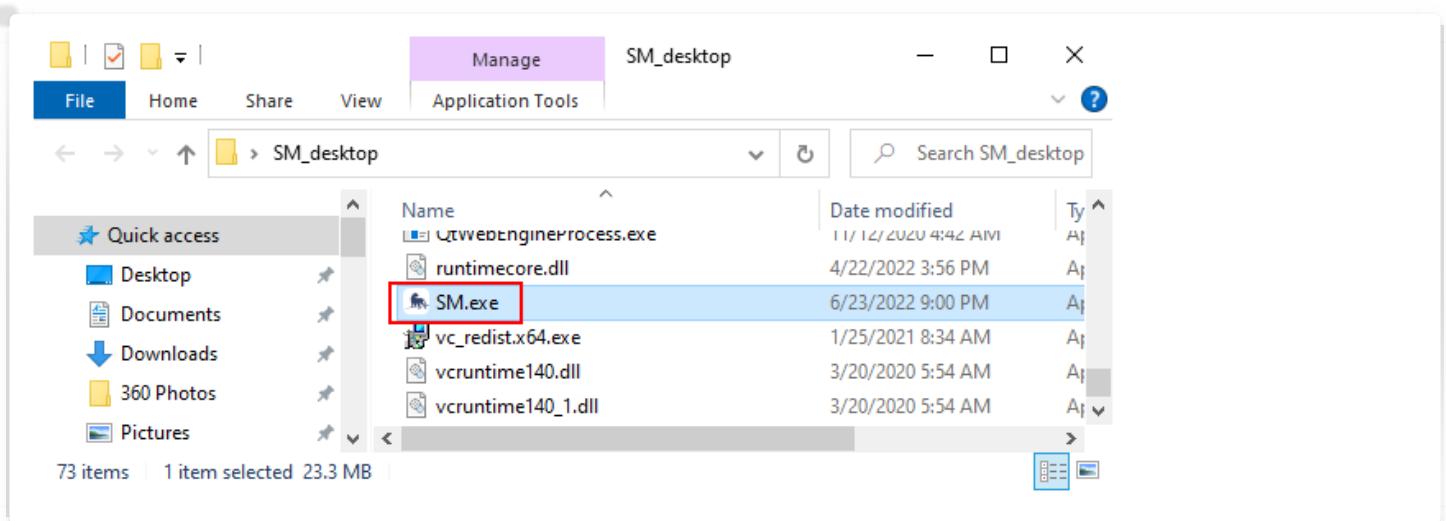
3.5. Windows desktop

SMART Mobile is available as a Windows desktop application. While data could be collected using this version, it is recommended only for testing and training purposes.

A ZIP file for SMART Mobile is available for download from the Download option on the SMART Conservation Tools website: <https://smartconservationtools.org/>. Once downloaded, open the file in Windows Explorer and drag **SM/Desktop** folder to the Windows desktop:



Now open the SM_Desktop folder from the Desktop and locate the SM file and double click it to launch:



4. Kiosk mode

Kiosk mode allows SMART Mobile to lock the device so that other phone functions are not accessible. During kiosk mode, users will not be able to exit SMART Mobile to use other applications or phone functions.

The installation process is similar to Android APK mode (see above), however the device must be provisioned. The provisioning process requires that the device be factory reset.

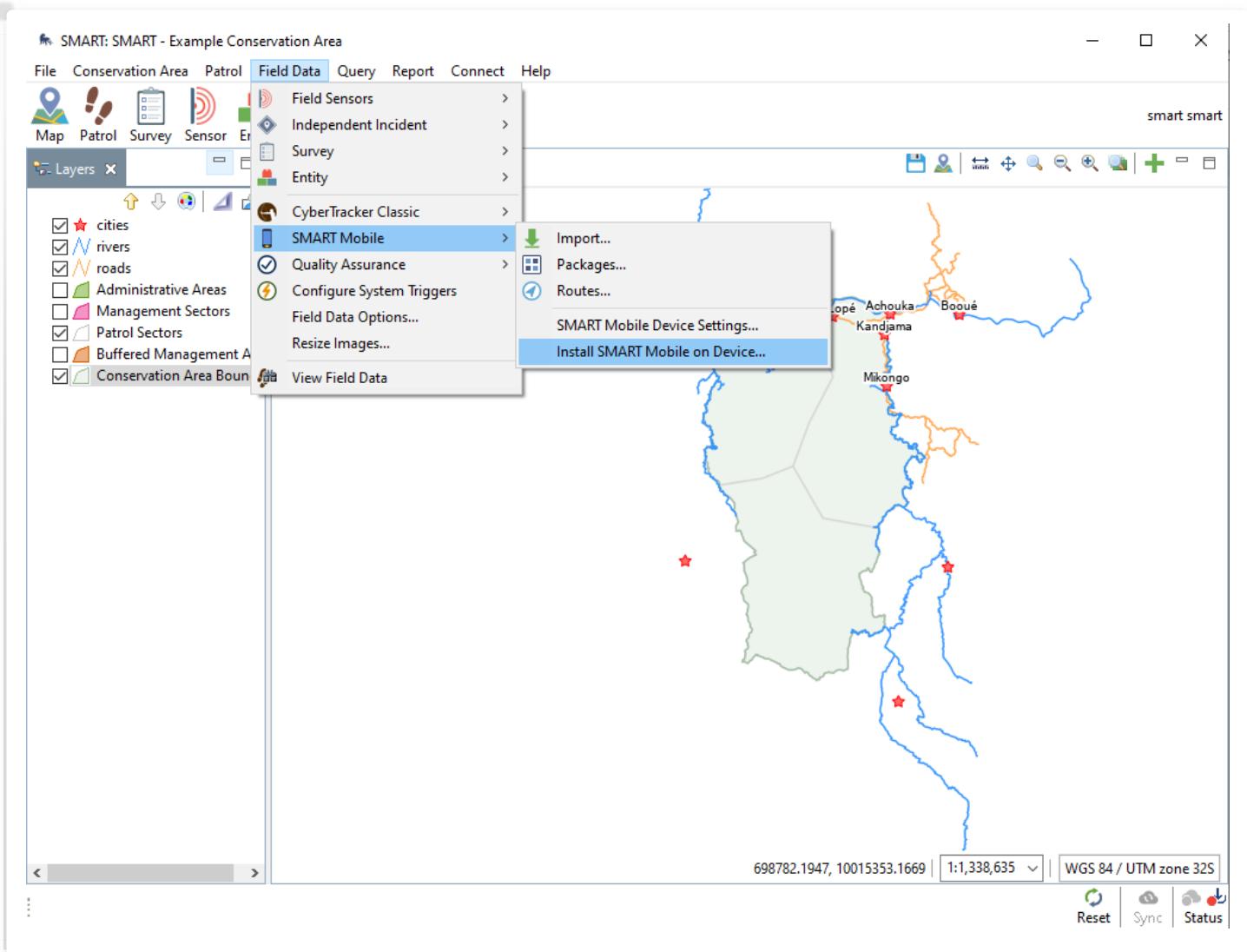
The APK file for SMART Mobile is available for download from the Download option on the SMART Conservation Tools website: <https://smartconservationtools.org/>.

Limitations:

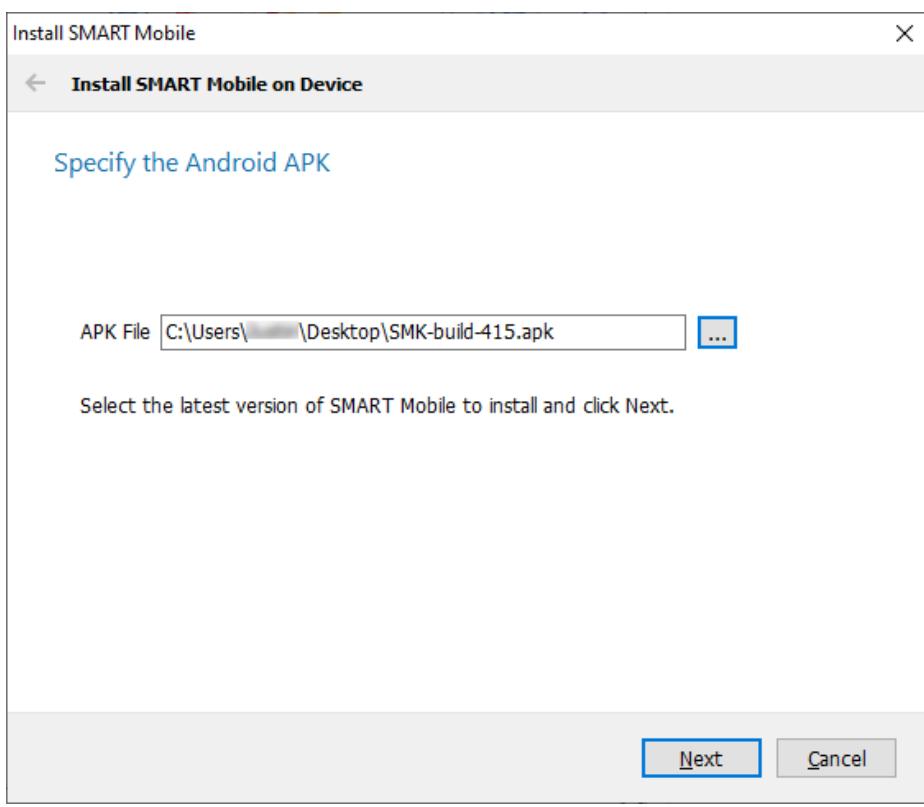
- Updates will not be automatic.
- Updates will require repeating the installation process with a new APK. It is not necessary to reprovision the device, the new version can be installed over the old one using the Android APK installation mode (see above).
- Other phone applications cannot be used until first exiting kiosk mode.

4.1. Installation

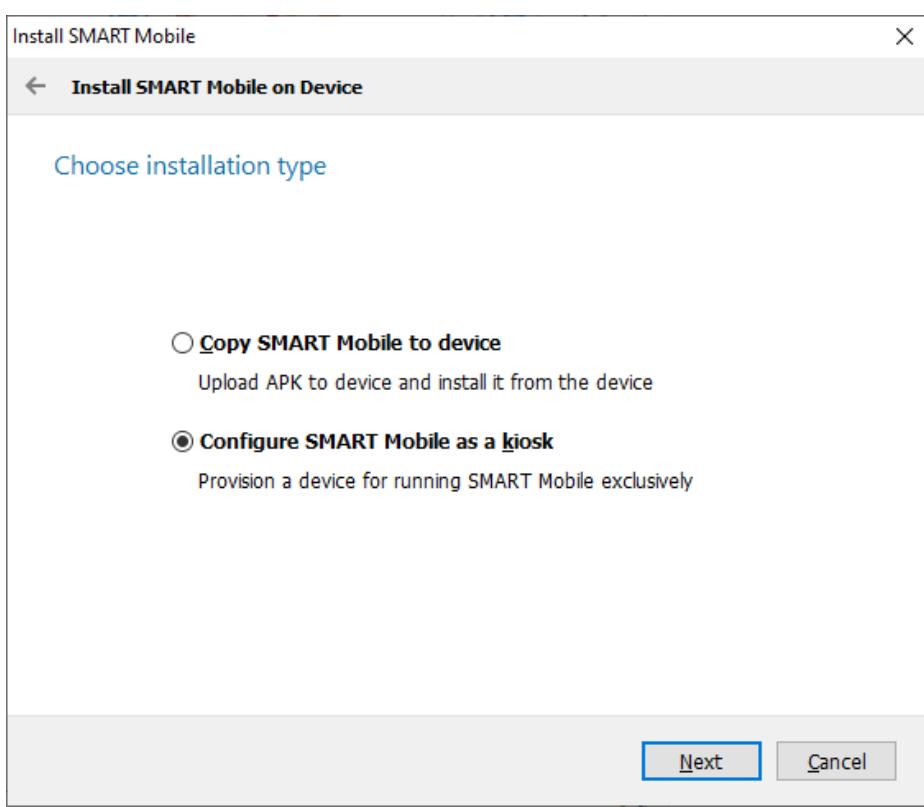
To start, select **Install SMART Mobile on Device...** from the **Field Data** menu and **SMART Mobile** submenu:



Use the '...' button and select the APK file from the file system and click **Next**:

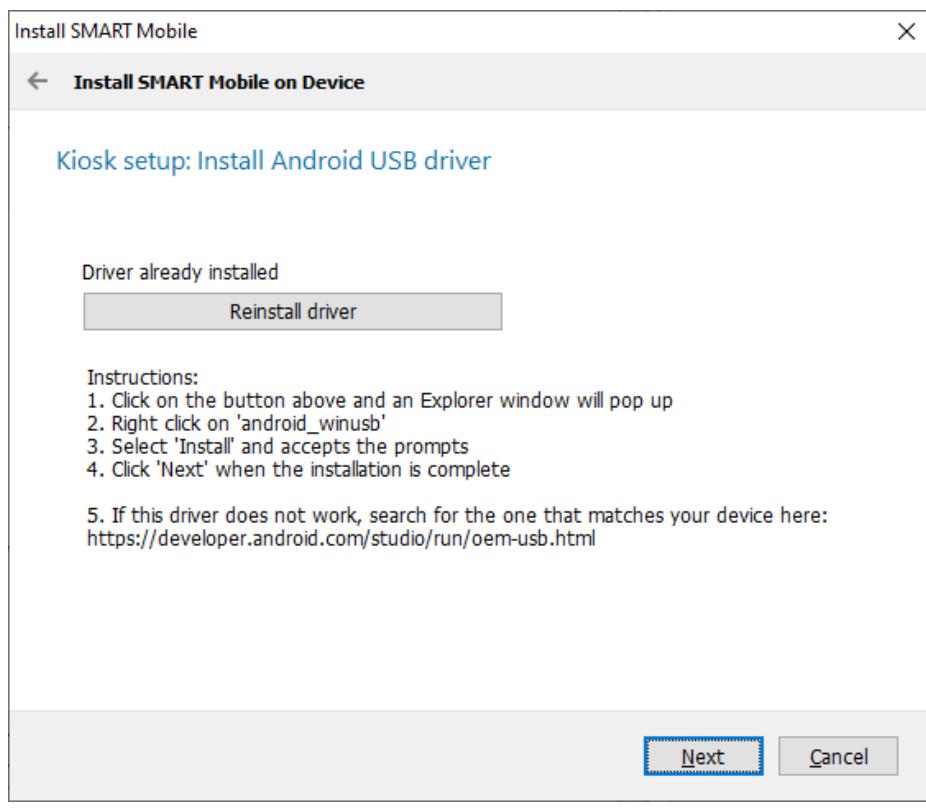


Then select **Configure SMART Mobile as a kiosk** and click **Next**:

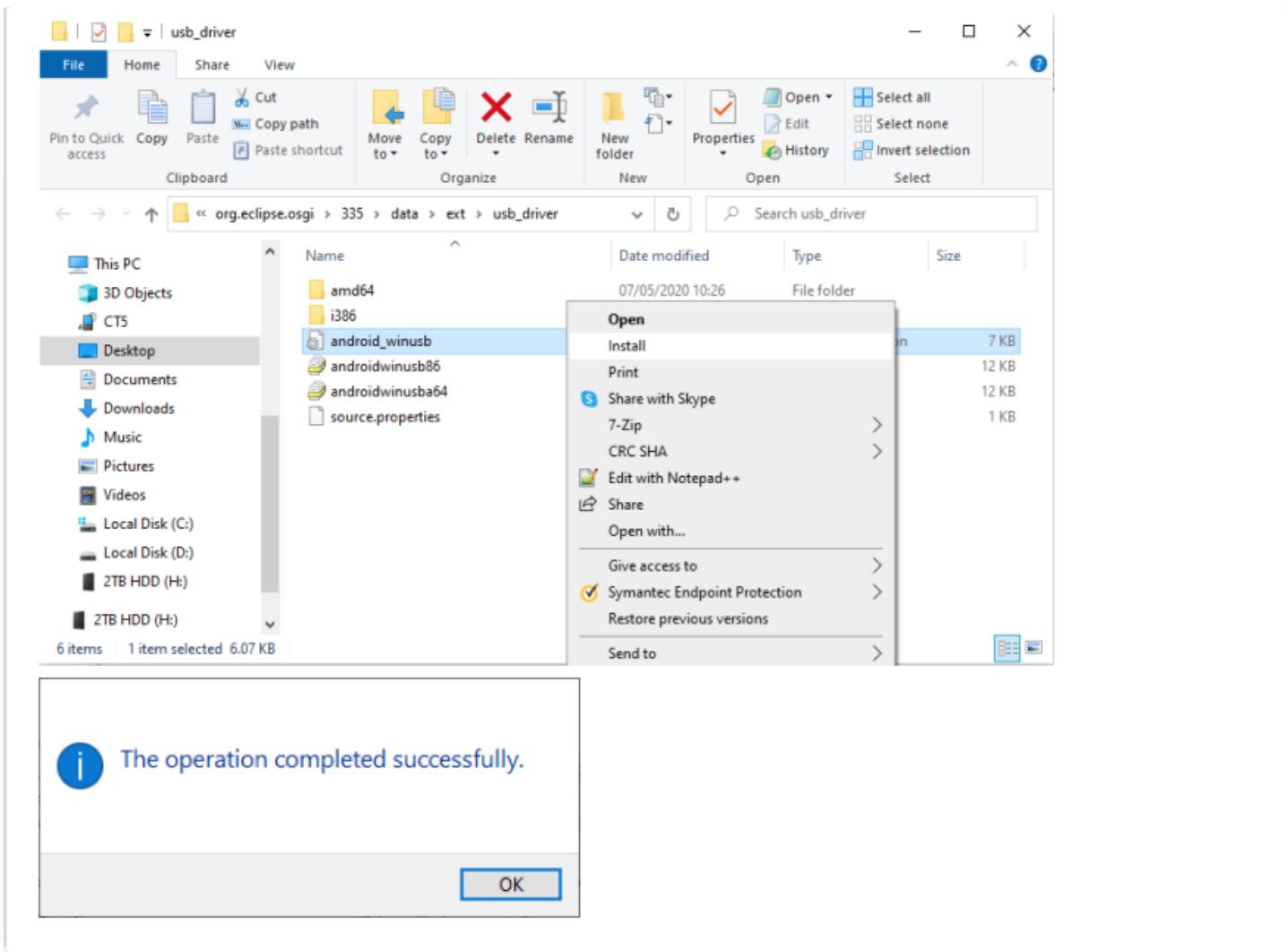


Click **Install driver** - once it is installed once, then the button caption will change to **Reinstall driver**. This is a one-time

operation on Windows. If the button reads **Reinstall driver**, then there is no need to repeat this process:



Right click on "android_winusb" (file type: Setup Information) and select **Install**.



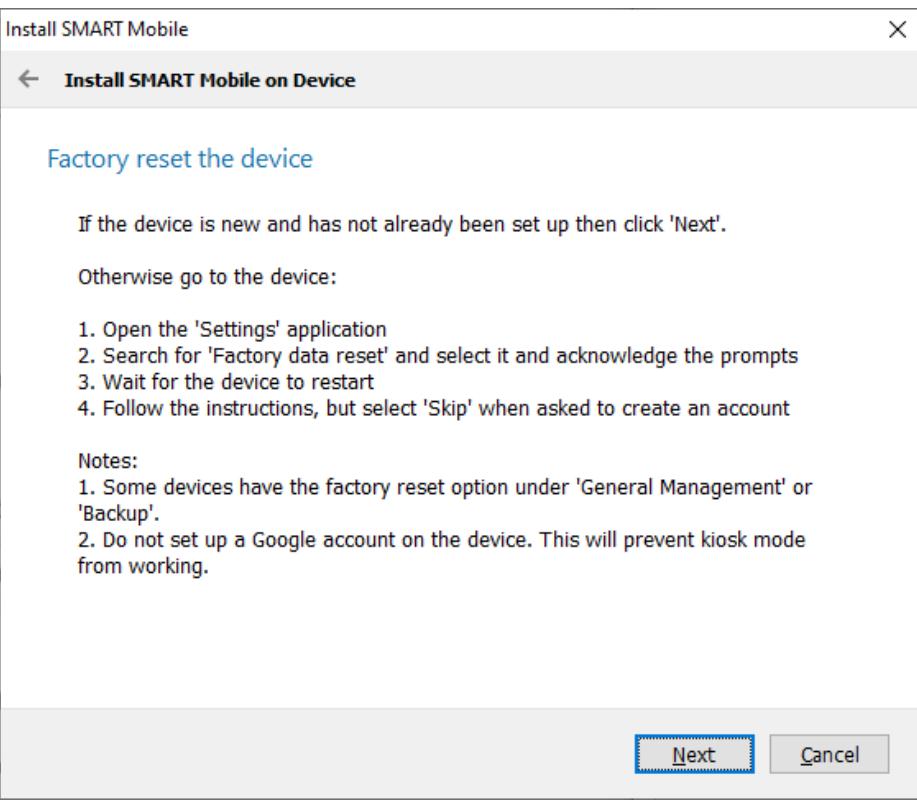
Once the driver is installed, click **Next**.

4.2. Preparing the device

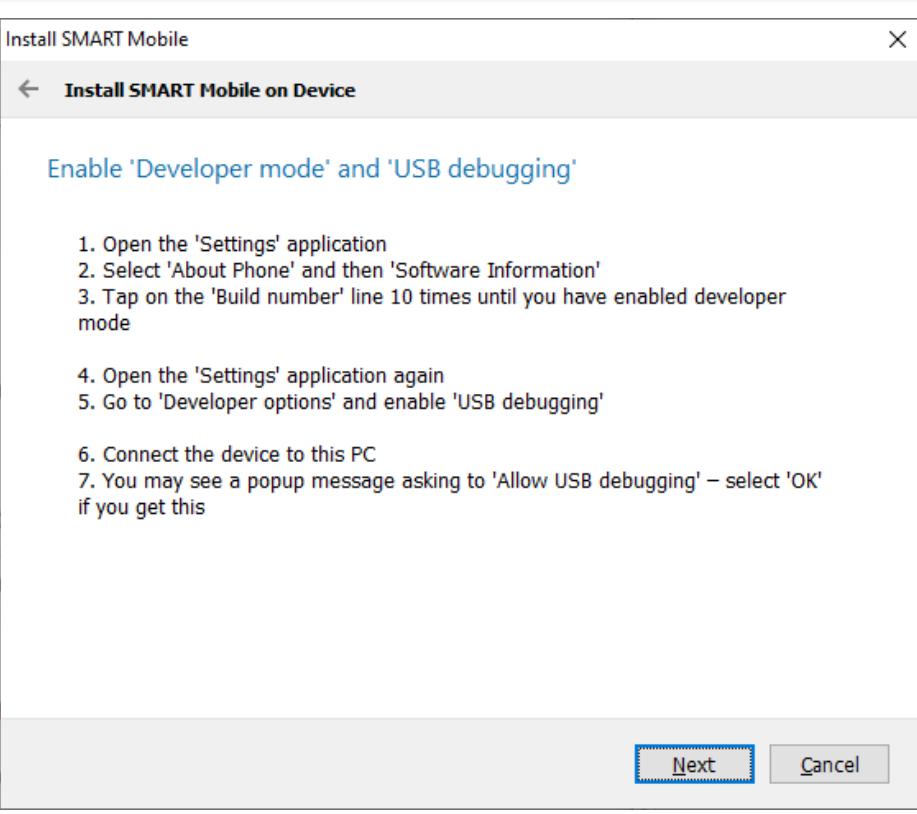
If the device is brand new, then there is no need to reset it. Otherwise, factory reset the device by opening **Settings** and selecting **Factory data reset**. Accept all prompts and wait for the device to restart.

Note: it is important to skip creating an account. If an account is active on the device, kiosk mode will not work.

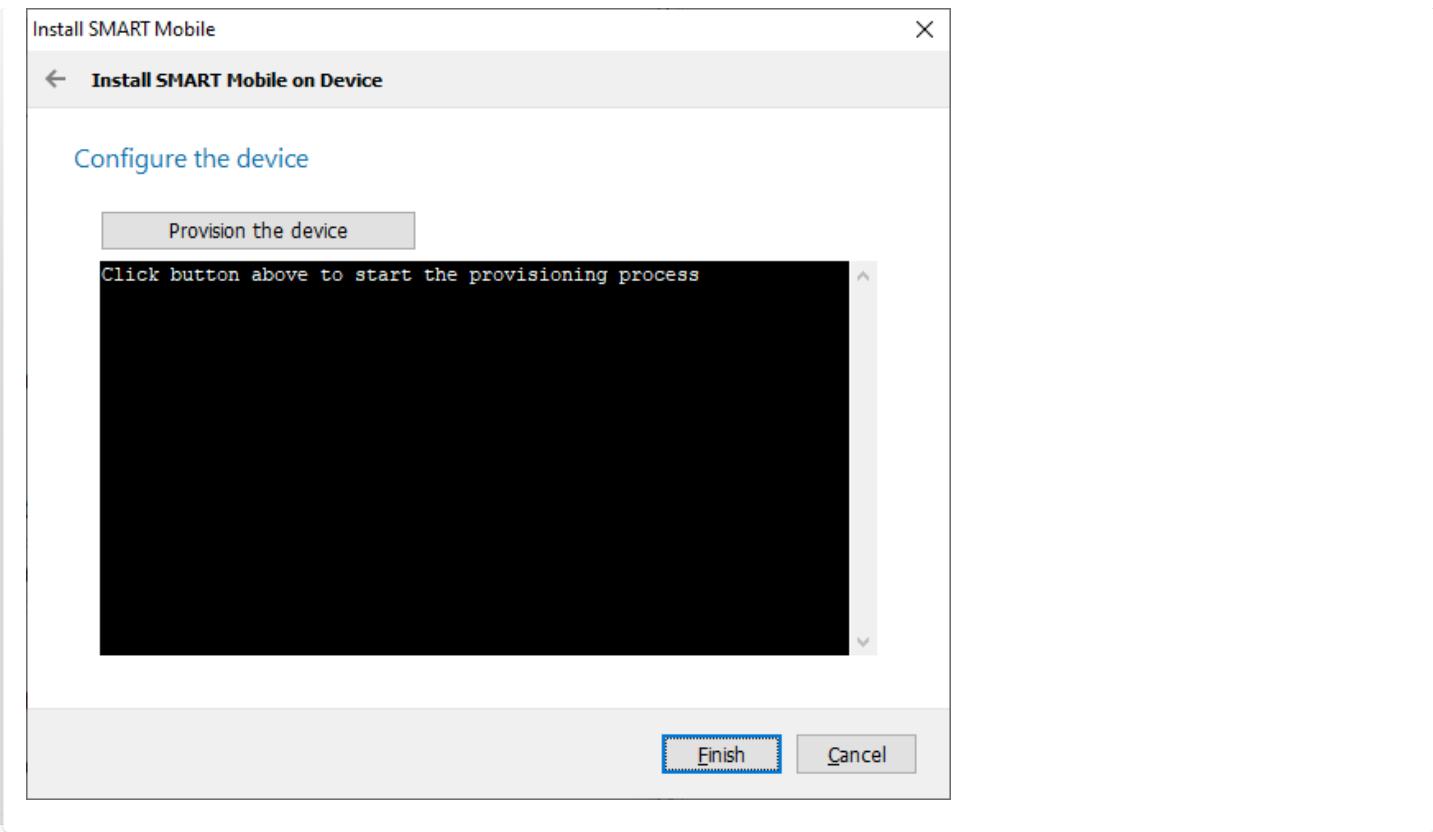
Follow the instructions below and click **Next**:



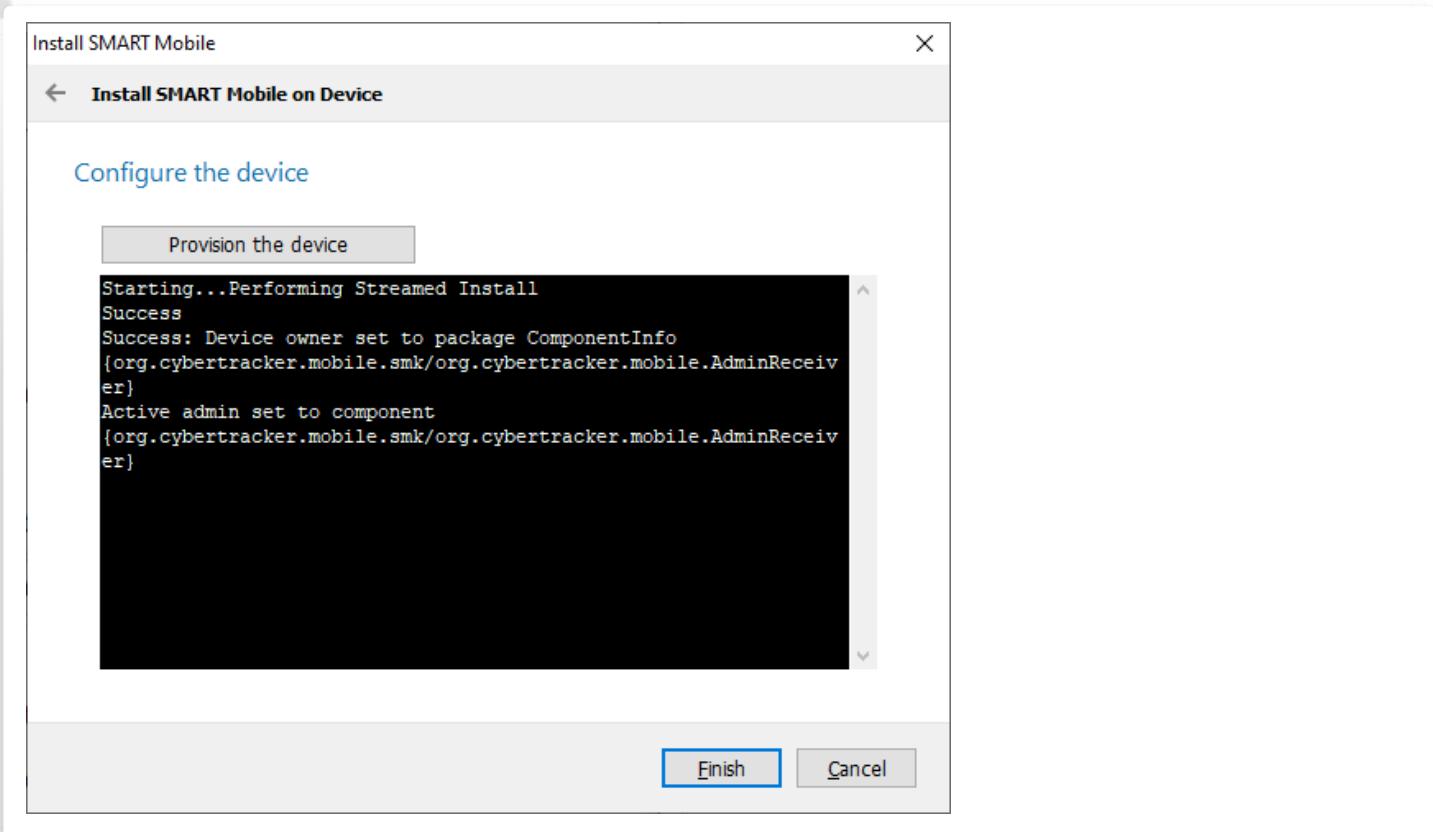
Follow the instructions to enable **Developer mode** and **USB debugging** and click **Next**:



Click **Provision the device** when ready:



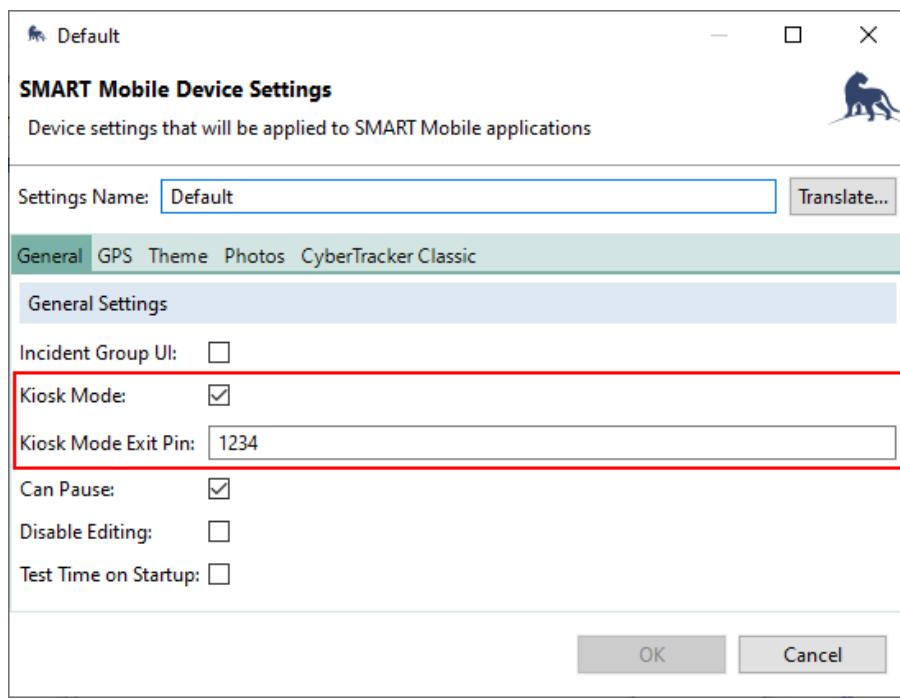
If the process is successful, the following will be shown:



Other devices may be provisioned directly from here, but plugging them in. When done, click **Finish**.

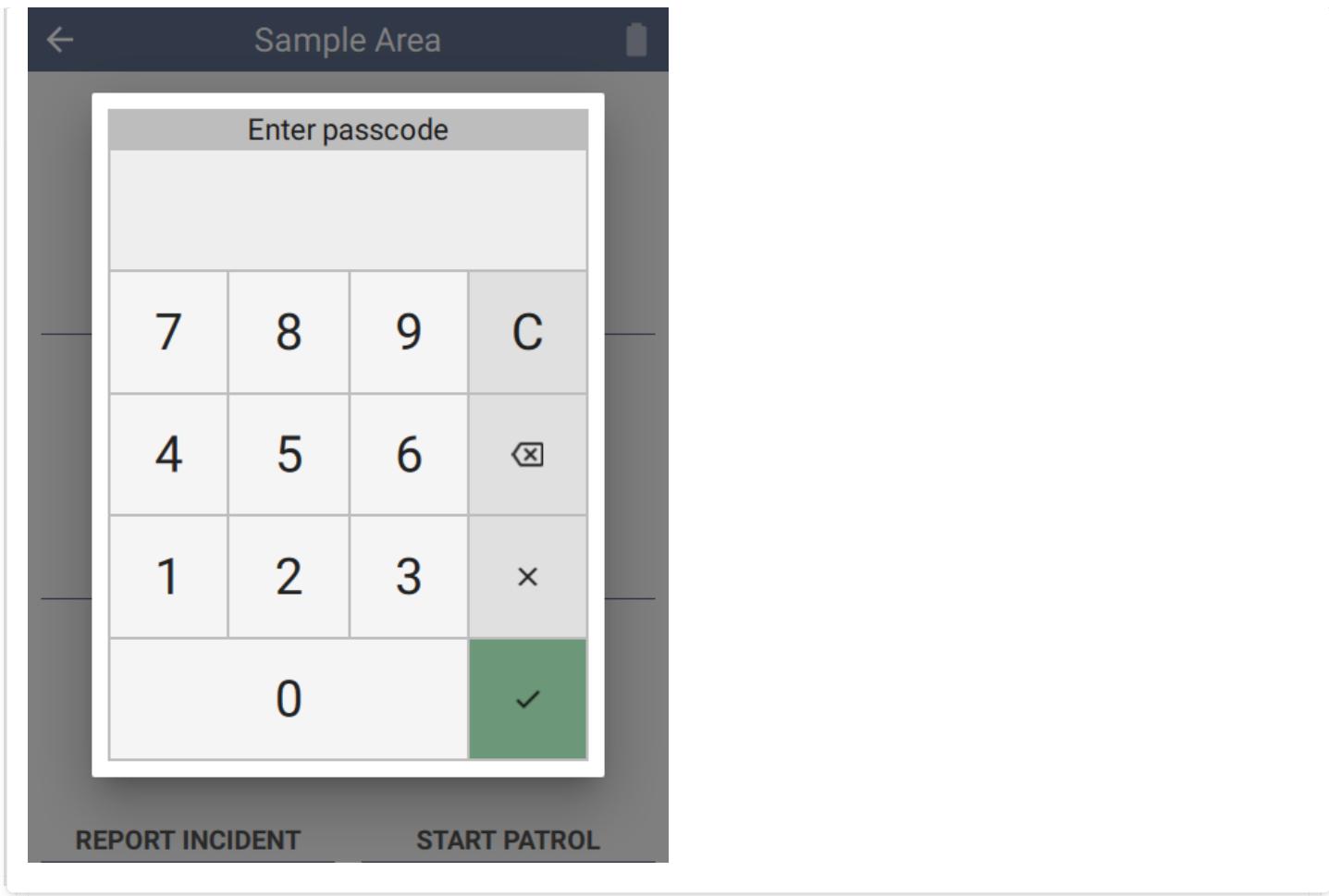
4.3. Desktop configuration

Kiosk mode is configured on a package using Device settings on the SMART Desktop:



Kiosk mode is a check box. If checked, then launching a Project will activate kiosk mode. Note that this only works if the kiosk version of SMART Mobile is installed.

Kiosk Mode Exit Pin controls the pin code needed to exit kiosk mode. When tapping **back** on the start page, the following popup will be displayed:



Entering the selected code will disable kiosk mode and exit the project.

4.4. Field operation

While kiosk mode restricts general use of the device the active project can be changed from the **Settings Page** using **Change project**.



Settings

Language

English (United States)



Dark theme



Page mode



Select routes



Change project



Exported data



Configuration



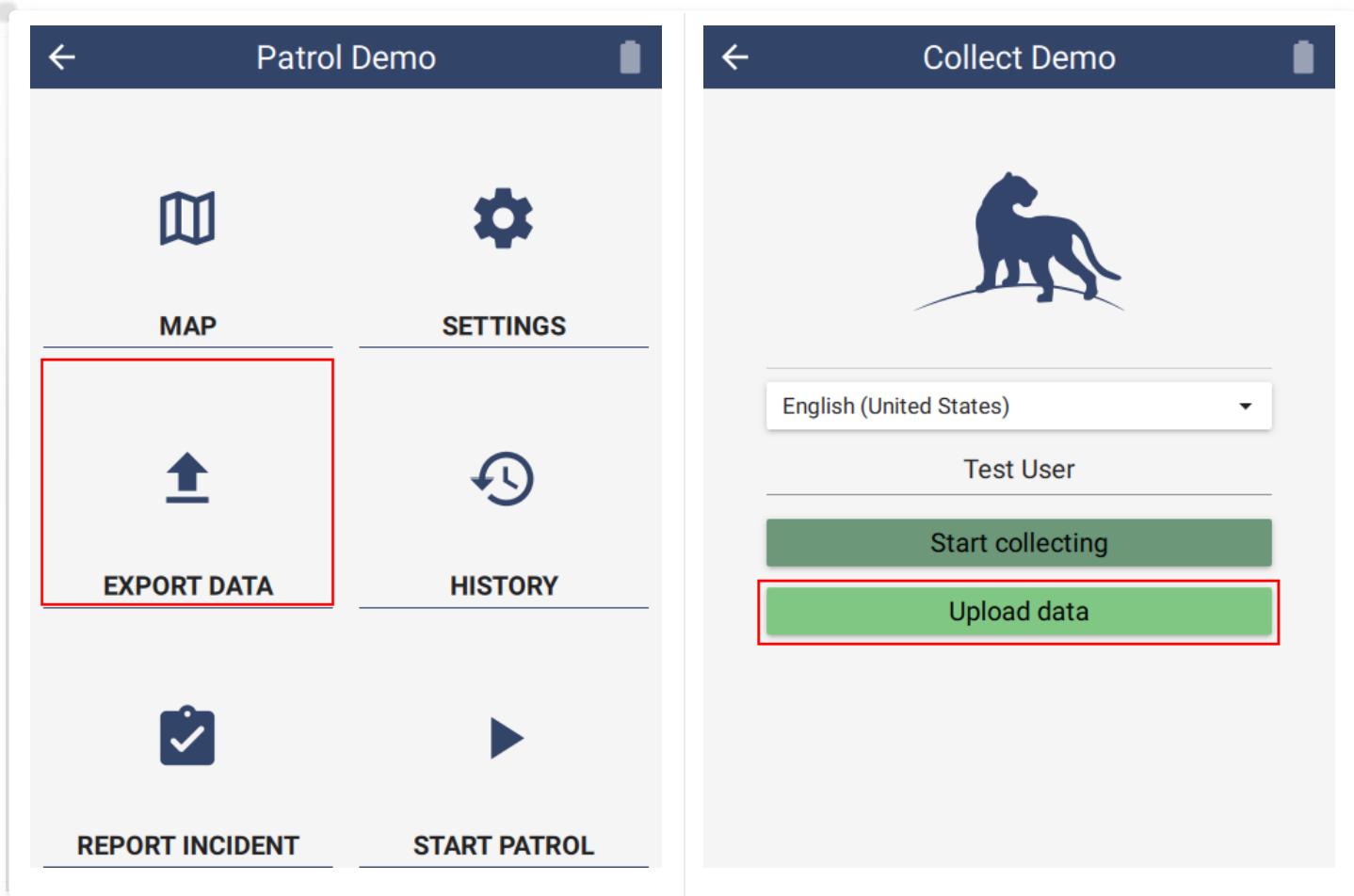
Recover Connect data



From the **Start page**, data can be exported or uploaded. When connected to a Windows PC via USB cable, the data can be downloaded without leaving kiosk mode.

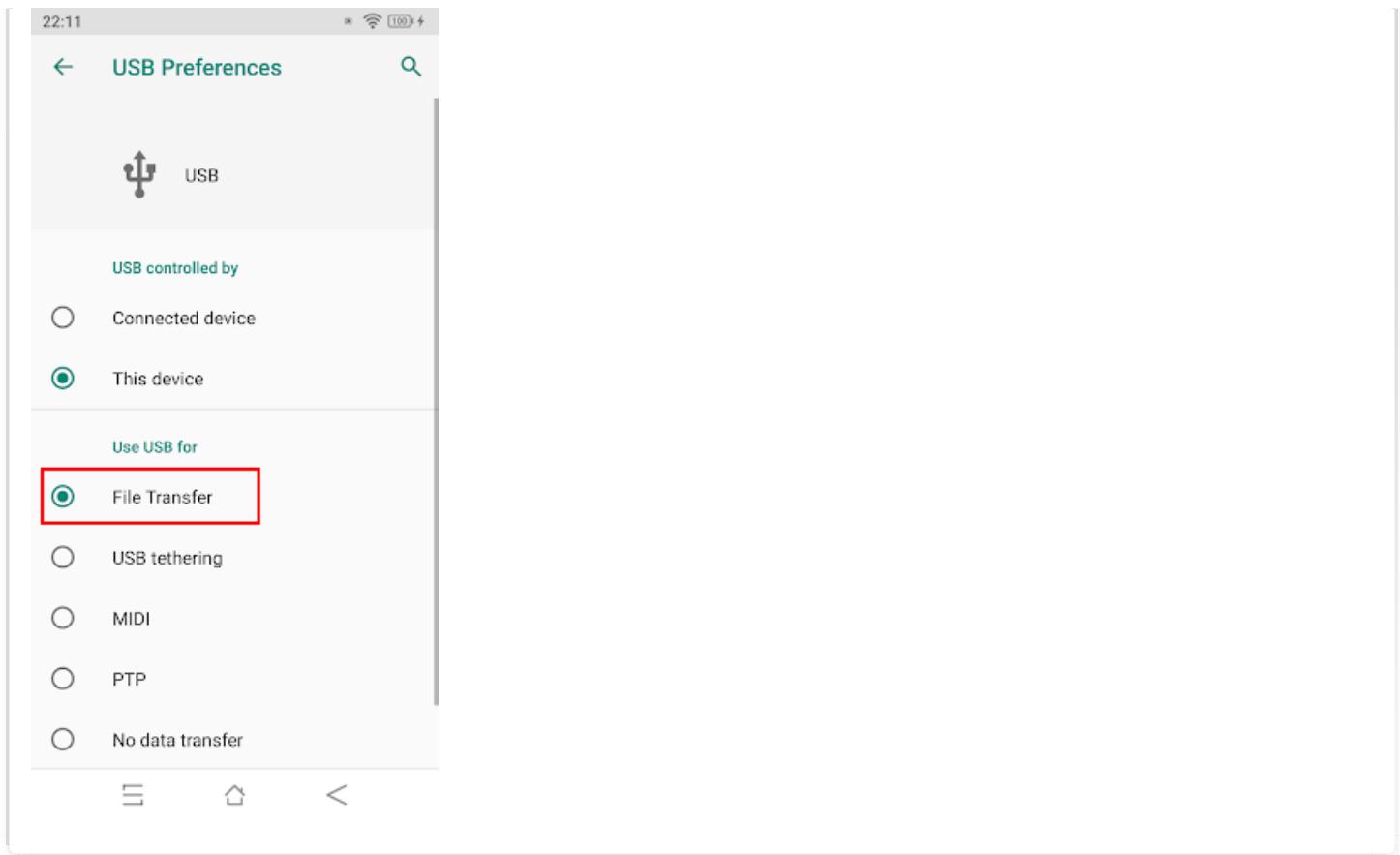
5. Retrieving data

Once data has been entered, use the **Export data** button on the project home page to ready the process. For Collect, click on the **Upload data** button to complete data upload.

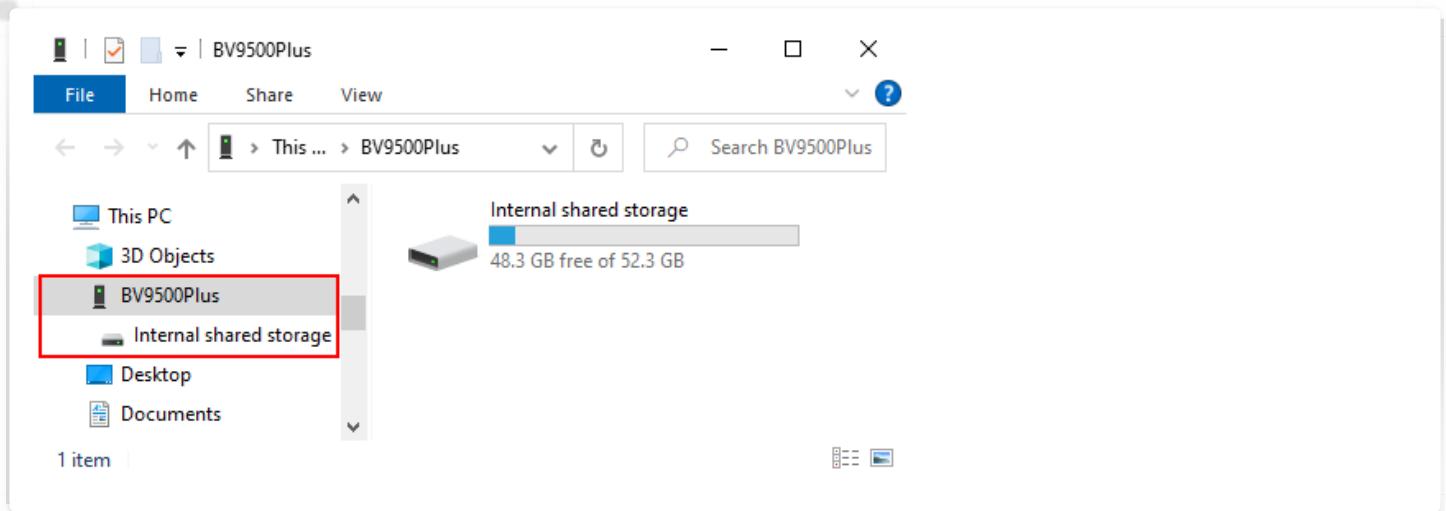


5.1. USB cable

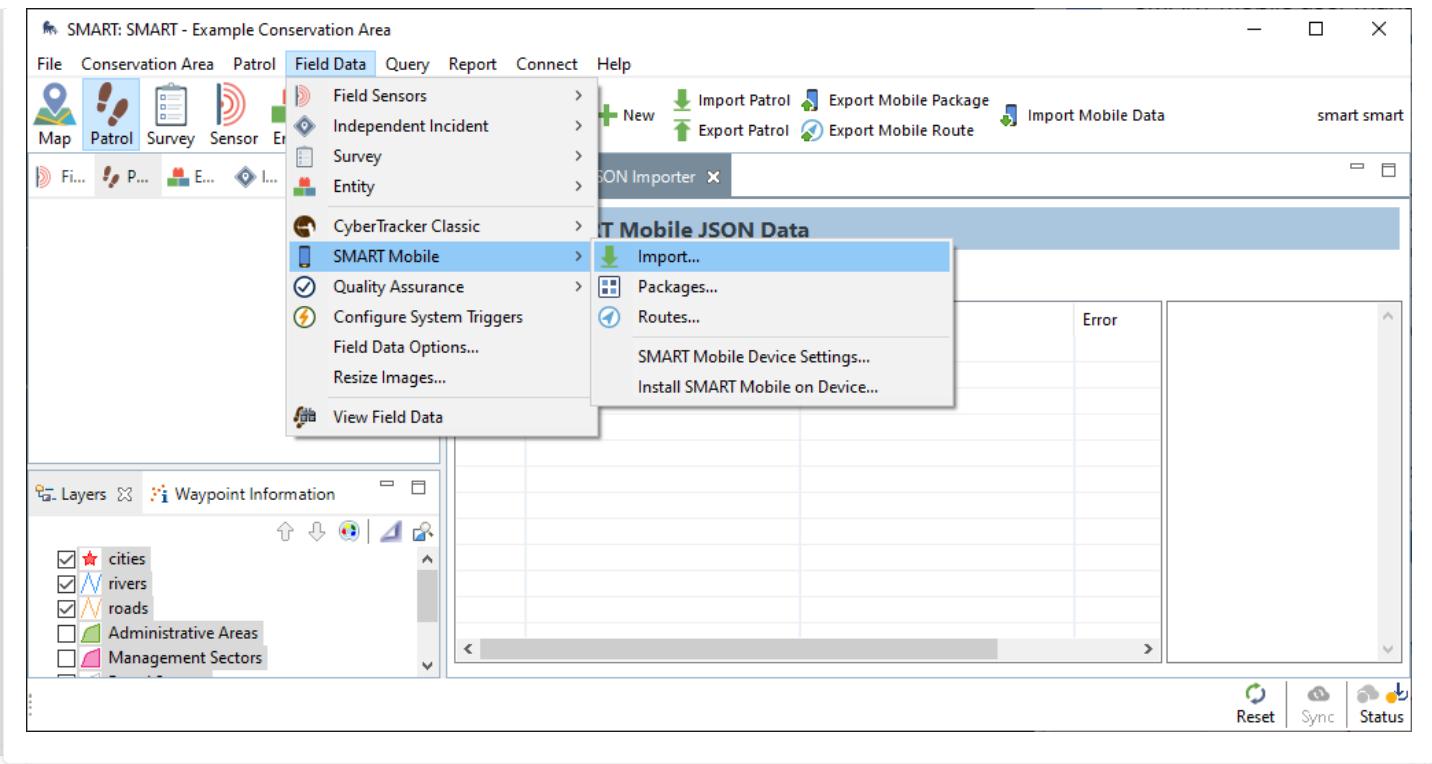
Connect the USB cable from the desktop to the device. Ensure the device is in **File Transfer** mode.



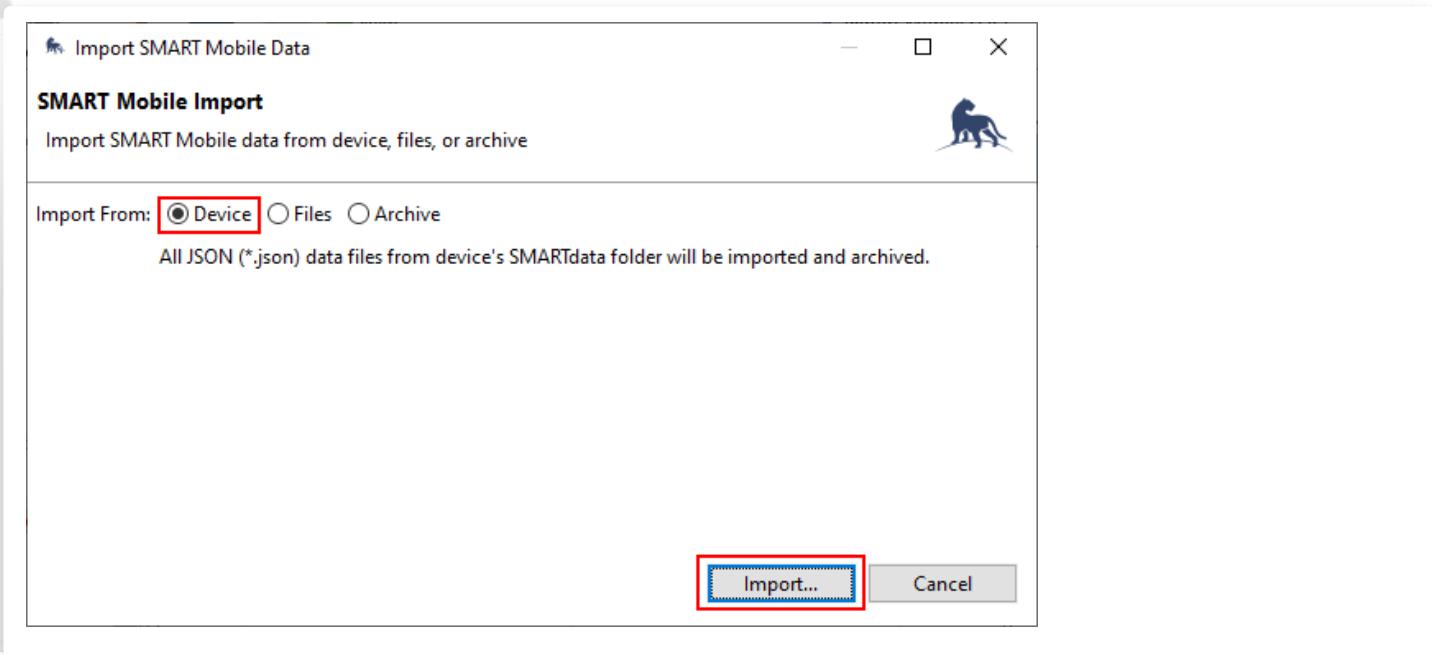
When correctly configured, the device will be present in **Windows Explorer**:



Choose **Import...** from the **Field Data -> SMART Mobile** menu.

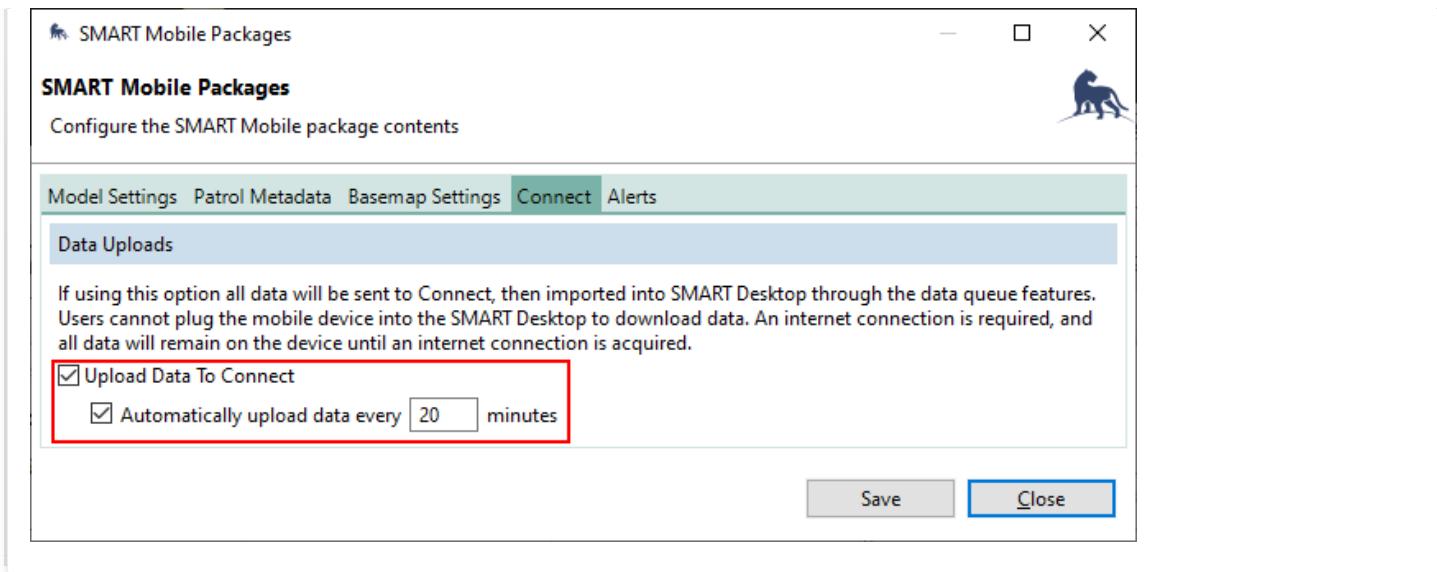


This will open the **Import SMART Mobile Data dialog**. Select **Device** and then click **Import**.



5.2. Connect

When SMART is configured with a Connect server, it can be configured to send data automatically. If **Upload Data To Connect** is unchecked, then data must be retrieved using the **USB cable** (see above). Otherwise, it will be sent directly to the Connect server over the network.



Since the connection to the server may be interrupted, the **Export data** option will attempt to send all unsent data to the server.

5.3. Collect

Collect automatically sends data to the server. After collection has completed, the **Upload data** button becomes visible. This sends any unsent data and resets the project.

6. Configuration

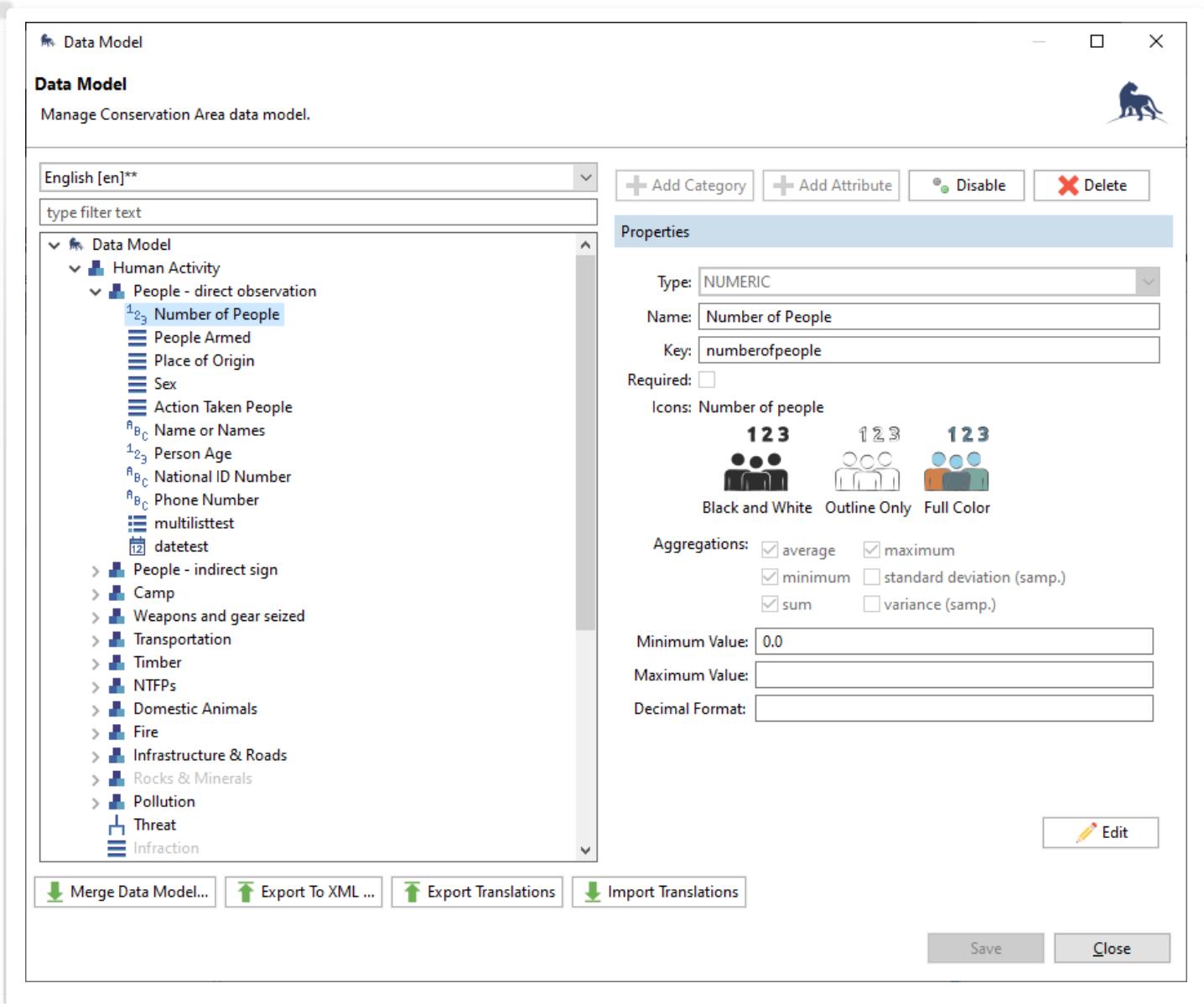
6.1. Data model

Data collection begins with the creation of a Data Model in SMART Desktop. The Data Model defines the data which SMART Mobile will collect.

More information can be found in the SMART Essentials Handbook in the SMART Resource Library:

<https://smartconservationtools.org/Resources/Resource-library>

The Data Model editor can be reached from the **Conservation Area** menu:



The Data Model is organized as a hierarchy. SMART Mobile users will drill into **Categories** until reaching a set of **Attributes**. For example, the **Human Activity** -> **People - direct observation** category will show the attributes Threat, Number of People, People Armed, etc.

Note: while **Threat** is not in the **People - direct observation category**, it is in the **Human Activity** Category and is therefore part of the required attributes:

6.1.1. CATEGORY

The Data Model is organized as a hierarchy with Categories and Attributes. Categories are used for grouping (they can contain other Categories) and they can contain Attributes.

Categories have an icon and a name for display.

6.1.2. ATTRIBUTE

Attributes are data values that SMART Mobile collects, e.g. a number, a note, etc. An Attribute has a type which governs what kind of data it can hold. The supported types are:

- NUMERIC - numbers
- TEXT - for text
- LIST - a single select list of options
- MULTI LIST - a check list of options
- TREE - a hierarchical single select list
- BOOLEAN - an on/off or yes/no value
- DATE - a date value

6.1.2.1. NUMERIC

Numeric attributes are collected with a keypad. Once the number has been entered, tap the check in the top right corner of the screen:



Number of People



People - direct observation



			5
7	8	9	C
4	5	6	☒
1	2	3	.
0			±

Threat

Number of People

5



People Armed



Place of Origin



Sex



Action Taken People



Name or Names



Person Age

National ID Number

Phone Number



National ID Number



12-34-56



People - direct observation



Threat

Number of People

5



People Armed



Place of Origin



Sex



Action Taken People



Name or Names



Person Age

National ID Number

12-34-56

Phone Number

6.1.2.3. LIST

List attributes allow the selection of a single option from a list:



Action Taken People

Observed Only

Unsuccessful Pursuit

Arrested

Verbal Warning

Written Warning



People - direct observation

Threat

Number of People

5

1 2 3

People Armed

Place of Origin

Sex

Action Taken People

Observed Only

Name or Names

Person Age

National ID Number

12-34-56

6.1.2.4. MULTI LIST

Multi list attributes allow selection of multiple options from a list:

Activity		<input checked="" type="checkbox"/>
Walking		<input checked="" type="checkbox"/>
Running		<input type="checkbox"/>
Eating		<input checked="" type="checkbox"/>
Drinking		<input checked="" type="checkbox"/>
Sleeping		<input type="checkbox"/>

Wildlife - direct observation		<input checked="" type="checkbox"/>
Threat		
Species		
Activity		
Walking, Eating, Drinking		
Number of Adult Males		
		
Number of Adult Females		
		
Number of Young		
		
Number of Age or Sex Unknown		
Action Taken Live Animals		
		

6.1.2.5. TREE

Tree attributes allow selection of a single option from within a categorized tree of options. For example, selecting **Biological Resource Use** and then **Logging & Wood Harvesting**:

Threat		<input type="checkbox"/>
None		
Residential & Commercial Development >		
Agriculture & Aquaculture >		
Energy Production & Mining >		
Transportation & Service Corridors >		
Biological Resource Use >		
Natural System Modifications >		
Invasive & Other Problematic Species & Genes >		
Pollution >		
Climate Change & Severe Weather >		

Threat Biological Resource Use		<input checked="" type="checkbox"/>
Hunting		
NTFP collection		
Logging & Wood Harvesting		
Fishing & Harvesting Aquatic Resources		

Wildlife - direct observation		<input checked="" type="checkbox"/>
Threat		
Logging & Wood Harvesting		
Species		
Activity		
Walking, Eating, Drinking		
Number of Adult Males		
		
Number of Adult Females		
		
Number of Young		
		
Number of Age or Sex Unknown		
Action Taken Live Animals		
		

6.1.2.6. BOOLEAN

Boolean attributes allow selection of an on/off or yes/no type of value:



Water Hole



Has Water



Species



6.1.2.7. DATE

Date attributes allow selection of a date:



Date of birth



1988	May	16
1989	Jun	17
1990	Jul	18
1991	Aug	19
1992	Sep	20



People - direct observation



Number of People



People Armed



Place of Origin



Sex



Action Taken People



Name or Names



Person Age

* National ID Number

Phone Number



Date of birth

Wed 1990/07/18

6.1.3. REQUIRED

Attributes can be marked as **Required**. This means that values must be set in order to save the observation. Attributes are marked with a '*' in the top left corner to indicate that they are required. If the check in the top right corner is pressed and a required attribute is not properly set, then that attribute will be highlighted in red.

People - direct observation	
Threat	
* Number of People	
People Armed	
Place of Origin	
Sex	
Action Taken People	
Name or Names	
Person Age	
* National ID Number	
Phone Number	

People - direct observation	
Threat	
Logging & Wood Harvesting	
* Number of People	
People Armed	
Armed	
Place of Origin	
Village B	
Sex	
Male	
Action Taken People	
Name or Names	
Person Age	
* National ID Number	

6.1.4. REGULAR EXPRESSION VALIDATION

Attributes can also be validated with a regular expression. This is a test which must pass in order for the attribute value to be considered valid. For example, if the National ID Number must be of the form 12-34-56, i.e. number number dash number number dash number number, then the expression would be "(\\d){2}-\\d{2}-\\d{2}".

Regular expressions are a well known term in computing and more about them can be found here:

https://en.wikipedia.org/wiki/Regular_expression.

6.2. Configurable data model

The Configurable Data Model allows an additional layer of customization over the Data Model (see above). This is helpful when choosing which subset of data needs collecting using SMART Mobile.

More information can be found in the SMART Essentials Handbook in the SMART Resource Library:

<https://smartconservationtools.org/Resources/Resource-library>

6.2.1. TOP LEVEL GROUP

The topmost Group contains options which apply to the entire model:

Configured Data Model

Editing data model configuration

Configurable Model Device Settings SMART Connect (Classic Only)

English [en]**

Demo Configurable Model

- Human Activity
 - People - direct observation
 - Threat
 - Number of People
 - People Armed
 - Place of Origin
 - Sex
 - Action Taken People
 - Name or Names
 - Person Age
 - National ID Number

Properties

Display Name: Demo Configurable M... Translate...

Display Mode: Text Cascade

Icon Set: Full Color

Use instantaneous GPS points:

Always take photos at the beginning:

Save Close

SMART Mobile respects **Use instantaneous GPS points**. When this option is checked, SMART Mobile will display a location editor bar on the observation home screen, just below the title. This allows users to choose when to take a GPS point, regardless of how long it will take to enter data:

Patrol

* Location

Make observation

History Map Patrol Incident Save

Patrol

* Location
32S - 793498E, 9937663N

Track

People - indirect sign

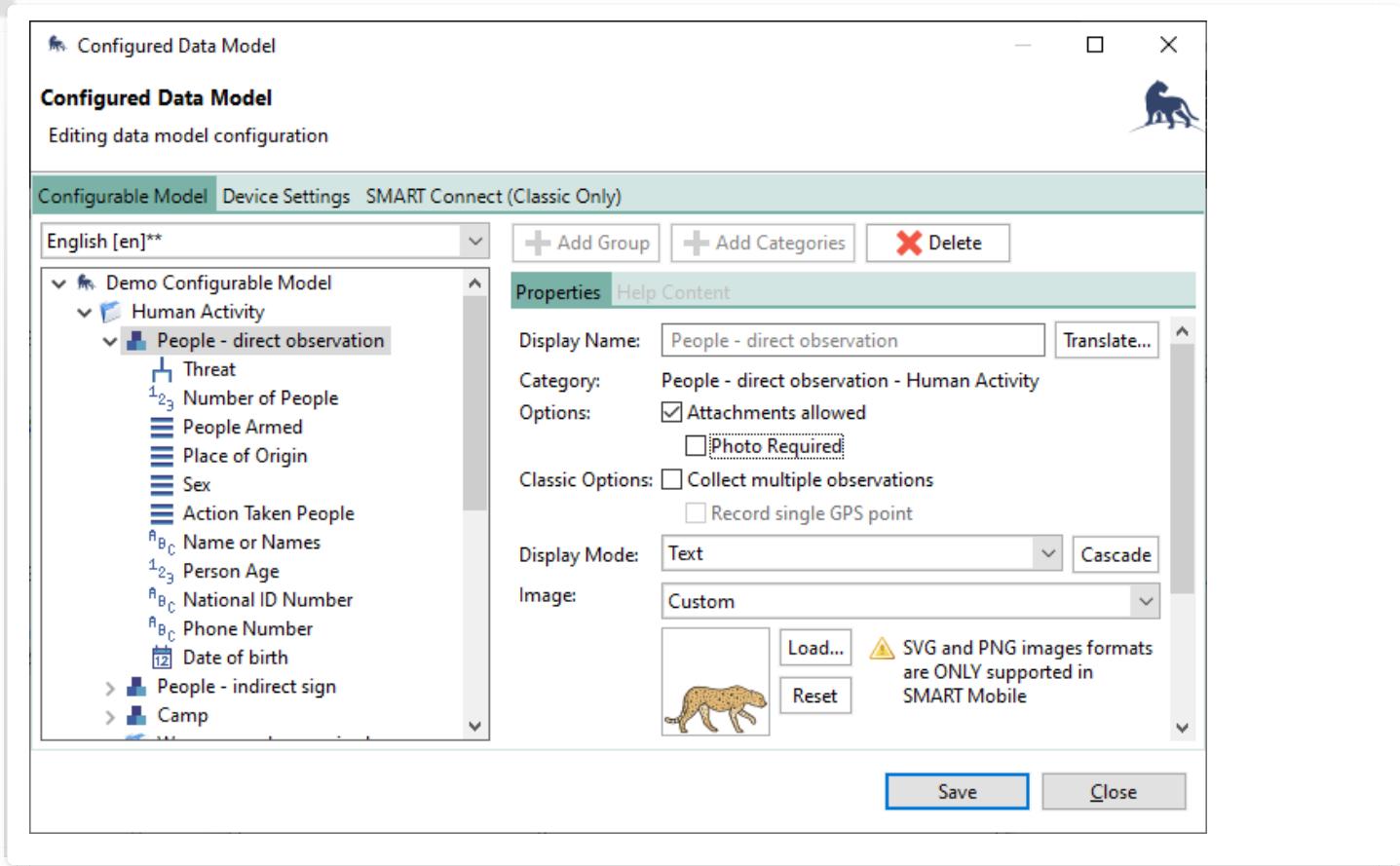
Add observation

History Map Patrol Incident Save

Groups provide a way to organize the model so that users can navigate to the attributes that need to be collected. Groups can contain subgroups and can have a custom icon.

6.2.3. CATEGORY

Selecting a Category primarily allows configuration of the attachments. Note that **Photo Required** will force the user to take a picture in order to save the observation:



6.2.3.1. Photos

Photos are taken by tapping on the camera icon at the top of the Attribute list (see below). Each time a picture is taken, another picture icon will appear to the right. If the picture list exceeds the width of the screen, they can be scrolled using a side swipe gesture.

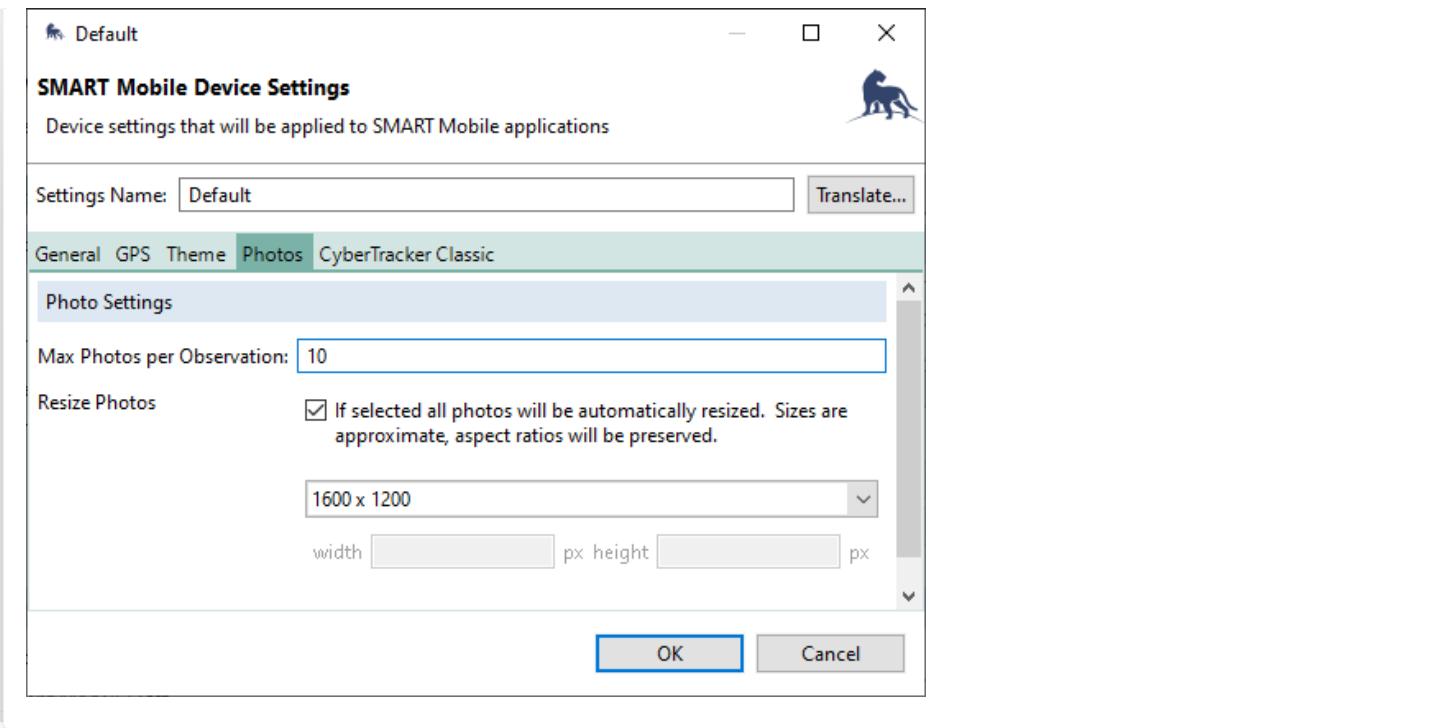
The icons along the bottom of the photo capture screen are:

- Flash mode - on, off and automatic
- White balance - automatic or disabled
- Capture - icon changes depending on the state:
 - Capture - for first capture
 - Recapture - retake the shot
 - Delete - delete the current image and retake the shot
- Open existing image - use an image from the gallery
- Switch to back or front camera

To delete previously taken photos, tap the photo and then click Delete (trash icon) in the bottom middle of the screen. Click **Yes, delete it** on the prompt.

6.2.3.1.1. Additional photo settings

Photo settings can be further configured in **SMART Mobile Device Settings**. This allows control over the maximum number of photos and also whether to resize them. Resizing photos is recommended to reduce the burden on the database as large photos are relatively expensive. If a resize is not specified, then SMART Mobile will automatically size photos to 1600x1200:



6.2.3.2. Audio recording

Audio recording is activated when **Attachments allowed** is enabled for a category. The audio recorder widget is shown below all other Attributes.

The buttons are:

- Red dot - start recording
- ▶ Play button - play existing recording through the speakers
- Stop button - stops recording or playback

To delete an audio recording, swipe the widget to the left and tap **Yes**.

6.2.4. ATTRIBUTE

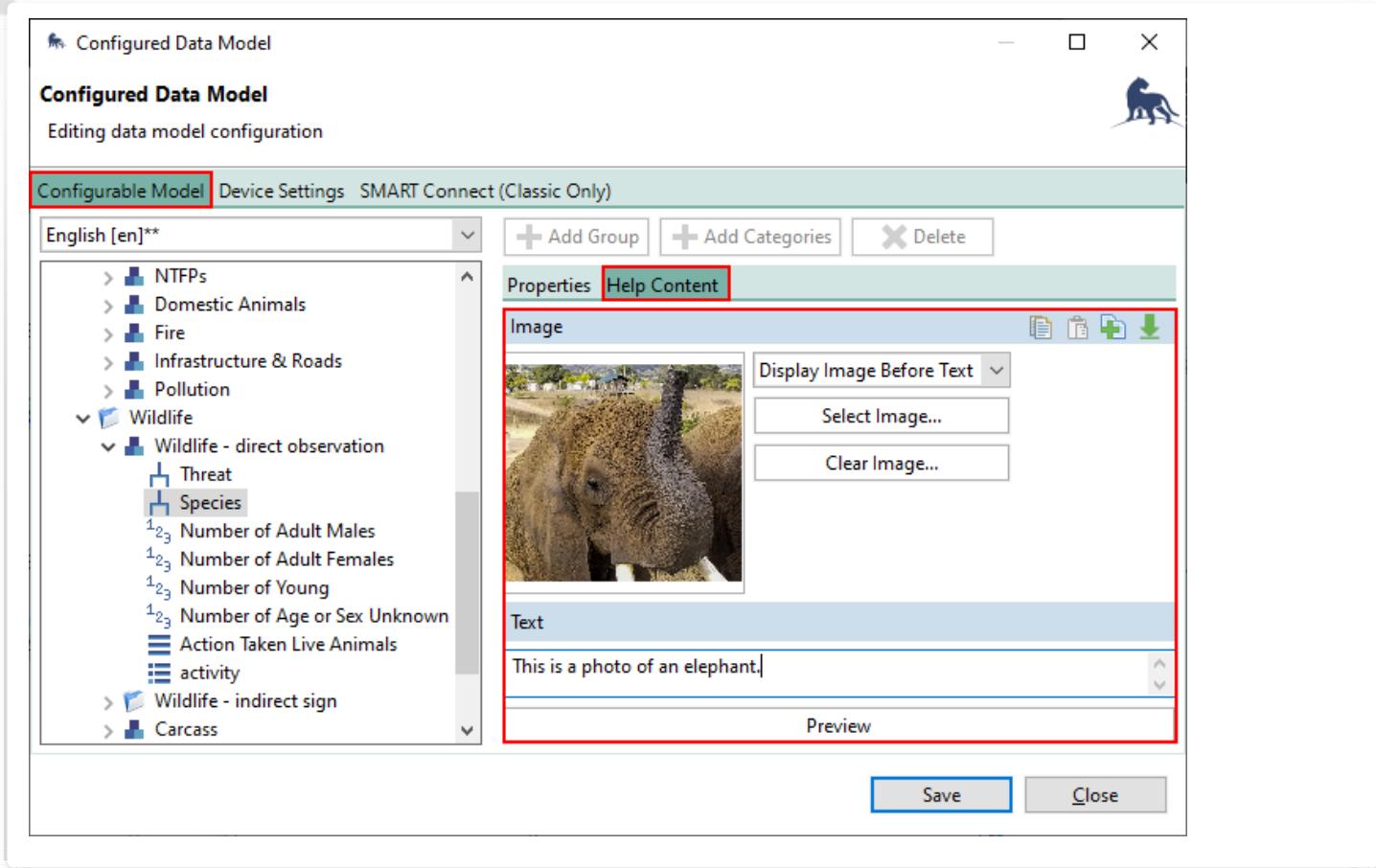
Attributes can be further customized in the Configurable Model. While the options vary according to the attribute type,

all attributes support the following:

- Image - override the icon from the data model
- Enabled - specify when the attribute should be shown
 - Always - attribute is always active
 - Never - attribute is invisible and cannot be changed
 - Custom - specify when the attribute is visible based on other attribute values
- Default value - the default value for the attribute

6.2.4.1. Help content

Help content can also be specified for attributes:



Tapping on the small 'i' icon on the top right of the **Species** row will show the help content. A long-press on the **Species** row will also show the help content.



Threat

Species

Long press



Number of Adult Males



Number of Adult Females



Number of Young



Number of Age or Sex Unknown

Action Taken Live Animals



activity



This is a photo of an elephant.

6.2.4.2. NUMERIC

Numeric Multi-Select can be checked on a NUMERIC attribute. This requires that the previous attribute be a LIST attribute with the **Multiple Observations** property checked (see LIST attribute below).

In the example below, there will be four sub-records: Abandoned, Active, Inactive and Unknown. Each of these will support entry of all subsequent attributes in the Category:

This transforms the prior list (Status) into a number list. For each specified item, all subsequent fields (i.e. Camp Capacity & Action Taken Camp) can be entered into a Record. In the example below, since two items were specified as non-zero, the second Status attribute reads "2 records". Tapping on this row will allow entry of subsequent attributes for each of the specified items.

Status	Count
Abandoned	3
Active	-
InActive	5
Unknown	-

Camp
Threat
Abandoned (3)
InActive (5)

Status	Capacity	Action
Abandoned	Medium	Observed Only
InActive	Small	Destroyed

6.2.4.3. TEXT

Text attributes can contain any kind of text. If the text comes from a QR code, check the **Enable QR Code** option. This will activate a barcode scanner on the device for this attribute. The following barcode formats are supported: QRCODE, EAN 13, CODE 39, CODE 128, CODE 128 GS1.

Use Numberpad will cause SMART Mobile to trigger the number keypad (instead of a full text keyboard) as the text

editor on the device.

The screenshot shows the 'Configured Data Model' application interface. The title bar says 'Configured Data Model'. The main area has a header 'Configured Data Model' and 'Editing data model configuration'. Below this is a navigation bar with tabs: 'Configurable Model' (selected), 'Device Settings', and 'SMART Connect (Classic Only)'. A logo of a lion is in the top right corner.

The left sidebar shows a tree structure of data models and categories:

- Demo Configurable Model
 - Human Activity
 - People - direct observation
 - Threat
 - Number of People
 - People Armed
 - Place of Origin
 - Sex
 - Action Taken People
 - Name or Names
 - Person Age
 - National ID Number
 - Phone Number
 - Date of birth
 - People - indirect sign
 - Camp
 - Weapons and gear seized
 - Transportation

6.2.4.4. LIST

Multiple Observations is a feature which allows several records to be captured in a single observation - one for each item in the list. In the example below, there will be four sub-records: Abandoned, Active, Inactive and Unknown. Each of these will support entry of all subsequent attributes in the Category:

Configured Data Model

Configured Data Model

Editing data model configuration

Configurable Model Device Settings SMART Connect (Classic Only)

English [en]**

Action Taken People

- Name or Names
- Person Age
- National ID Number
- Phone Number
- Date of birth

People - indirect sign

- Threat
- Type of Human Sign
- Age of Sign

Camp

- Threat
- Status**
- Number of Drying Racks
- Camp Capacity
- Action Taken Camp

- Weapons and gear seized
- Transportation
- Timber
- NTFPs
- Domestic Animals
- Fire
- Infrastructure & Roads

Properties Help Content

Display Name: Status

Attribute: Status (Camp - Human Activity)

Image: Data Model (Default Image)

Load... Reset

⚠ SVG and PNG images formats are ONLY supported in SMART Mobile

Enabled: Always

Multiple Observations:

Default Value:

Configuration: Status (default)

Abandoned Active InActive Unknown

Save Close

This transforms the list into a multi list. For each selected item, all subsequent fields (i.e. Number of Drying Racks, Camp Capacity & Action Taken Camp) can be entered into a Record. In the example below, since two items were checked, the second Status attribute reads "2 records". Tapping on this row will allow entry of subsequent attributes for each of the checked items.

← Status ✓

Abandoned	<input checked="" type="checkbox"/>
Active	<input type="checkbox"/>
InActive	<input checked="" type="checkbox"/>
Unknown	<input type="checkbox"/>

← Camp ✓

Threat	
Status	Abandoned, InActive
Status	2 records

← Status ✓

Abandoned	
Number of Drying Racks	5
Camp Capacity	Medium
Action Taken Camp	Observed Only
InActive	
Number of Drying Racks	4
Camp Capacity	Small
Action Taken Camp	Destroyed

6.2.4.5. TREE

Tree attributes have an additional property called **Convert to List**. This will flatten the tree into a single select list.

6.2.4.6. Attribute Groups

Attribute groups or matrices can be created by selecting multiple attributes together (holding down the control key while clicking on them), then right clicking the mouse and selecting **Add to Attribute Group**. This creates a matrix using the LIST attributes - each LIST attribute will add an additional dimension. In the case below, there are two LIST attributes, so it will be a two dimensional matrix:

The screenshot shows the 'Configured Data Model' dialog with the 'Configured Data Model' tab selected. The left pane displays a hierarchical tree structure of attributes under 'English [en]**'. The 'Type of Transportation' attribute is selected and highlighted in blue. A context menu is open at this node, with the 'Add To Attribute Group' option highlighted in blue. Other options in the menu include 'Add Group', 'Add Categories', 'Delete', and 'Remove from Attribute Group'. The right pane contains the 'Properties' tab settings for the selected attribute:

- Display Name:** Type of Transportation
- Attribute:** Type of Transportation (Transportation - Human Activity)
- Image:** Data Model (Default Image) (with icons for a boat and a jeep)
- Enabled:** Always
- Multiple Observations:**
- Default Value:** Type of Transportation (default) (with a dropdown and edit buttons)

At the bottom right of the dialog are 'Save' and 'Close' buttons.

6.2.5. COLLECT MULTIPLE OBSERVATIONS

SMART Mobile supports collection of compound observations using the **Collect multiple observations** feature. This is enabled at the Category level:

Configured Data Model

Configured Data Model
Editing data model configuration

Configurable Model Device Settings SMART Connect (Classic Only)

English [en]**

+ Add Group + Add Categories Delete

Properties Help Content

Display Name: People - direct observation Translate...

Category: People - direct observation - Human Activity

Options:

- Attachments allowed
- Photo Required
- Collect multiple observations
- Record single GPS point

Display Mode: Text Cascade

Image: Custom

Load... Reset **SVG and PNG images formats are ONLY supported in SMART Mobile**

Save Close

The screenshot shows the 'Configured Data Model' interface. On the left, there's a tree view of the data model structure under 'Demo Configurable Model' and 'Human Activity'. An attribute named 'People - direct observation' is selected and highlighted with a red box. On the right, the 'Properties' tab is active, displaying various configuration options. The 'Collect multiple observations' checkbox is specifically highlighted with a red box, indicating it is the focus of the current discussion.

Once enabled, attributes have an additional property called **Enter once** with the options **Disabled**, **At the beginning** and **At the end**.

Configured Data Model

Configured Data Model

Editing data model configuration

Configurable Model Device Settings SMART Connect (Classic Only)

English [en]**

Add Group Add Categories Delete

Properties Help Content

Display Name: People Armed Translate...

Attribute: People Armed (People - direct observation - Human Activity)

Enter once:

- Disabled
- Disabled
- At the beginning
- At the end

Image:

Enabled: Always

Multiple Observations: not allowed in multiple observations mode

Default Value:

Configuration: People Armed (default)

Armed
Unarmed
Unknown

Save Close

The screenshot shows the 'Configured Data Model' configuration window. On the left, a tree view shows 'Demo Configurable Model' expanded, with 'Human Activity' selected. Under 'Human Activity', 'People - direct observation' is expanded, showing attributes: Threat, People Armed, Place of Origin, Name or Names, Person Age, National ID Number, Phone Number, Number of People, Sex, Action Taken People, Date of birth, and a collapsed section for 'People - indirect sign'. The 'People Armed' attribute is currently being edited. The 'Enter once:' dropdown is open, showing four options: 'Disabled' (selected), 'Disabled', 'At the beginning', and 'At the end'. A red box highlights the 'Enter once:' dropdown. Below it, there's an image of a person holding a rifle, a 'Reset' button, and configuration icons. The 'Configuration' dropdown shows 'People Armed (default)'.

At the beginning and **At the end** specify that the attribute will not be repeated and will be asked only once for the incident – either at the beginning or end.

If **Enter once** is set to **Disabled** then the attribute will be replicated.

In this example, Threat, People Armed & Place of Origin are set to **At the beginning** and **Action Taken People** is set to **At the end**. All other attributes are set to **Disabled**.

People - direct observation

Threat
None

People Armed
Unknown

Place of Origin
Village A

Records
1 record

Action Taken People
Observed Only

Records

Record 1	
Name or Names	John Smith
Person Age	42
Sex	Male
Date of birth	Fri 1978/07/28

Add record

Record 1

Name or Names
John Smith

Person Age
42

National ID Number

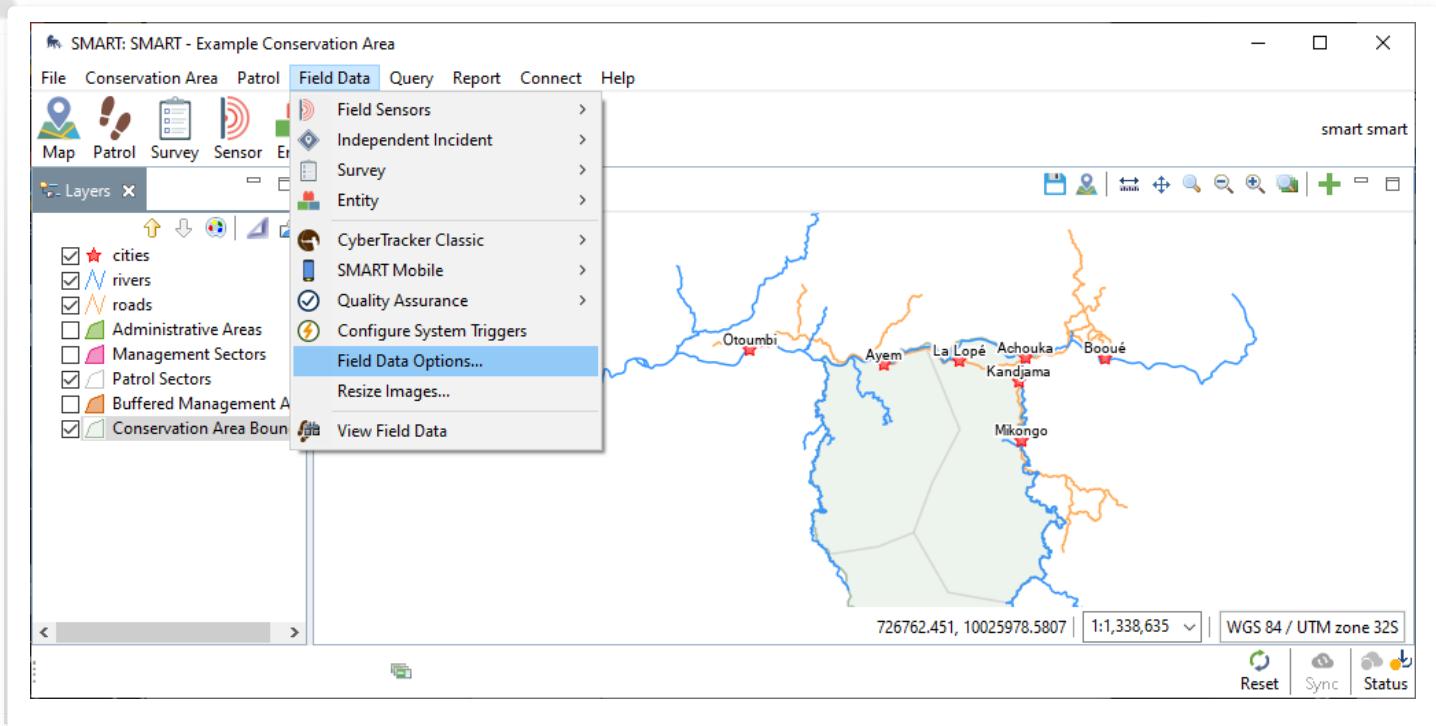
Phone Number

Sex
Male

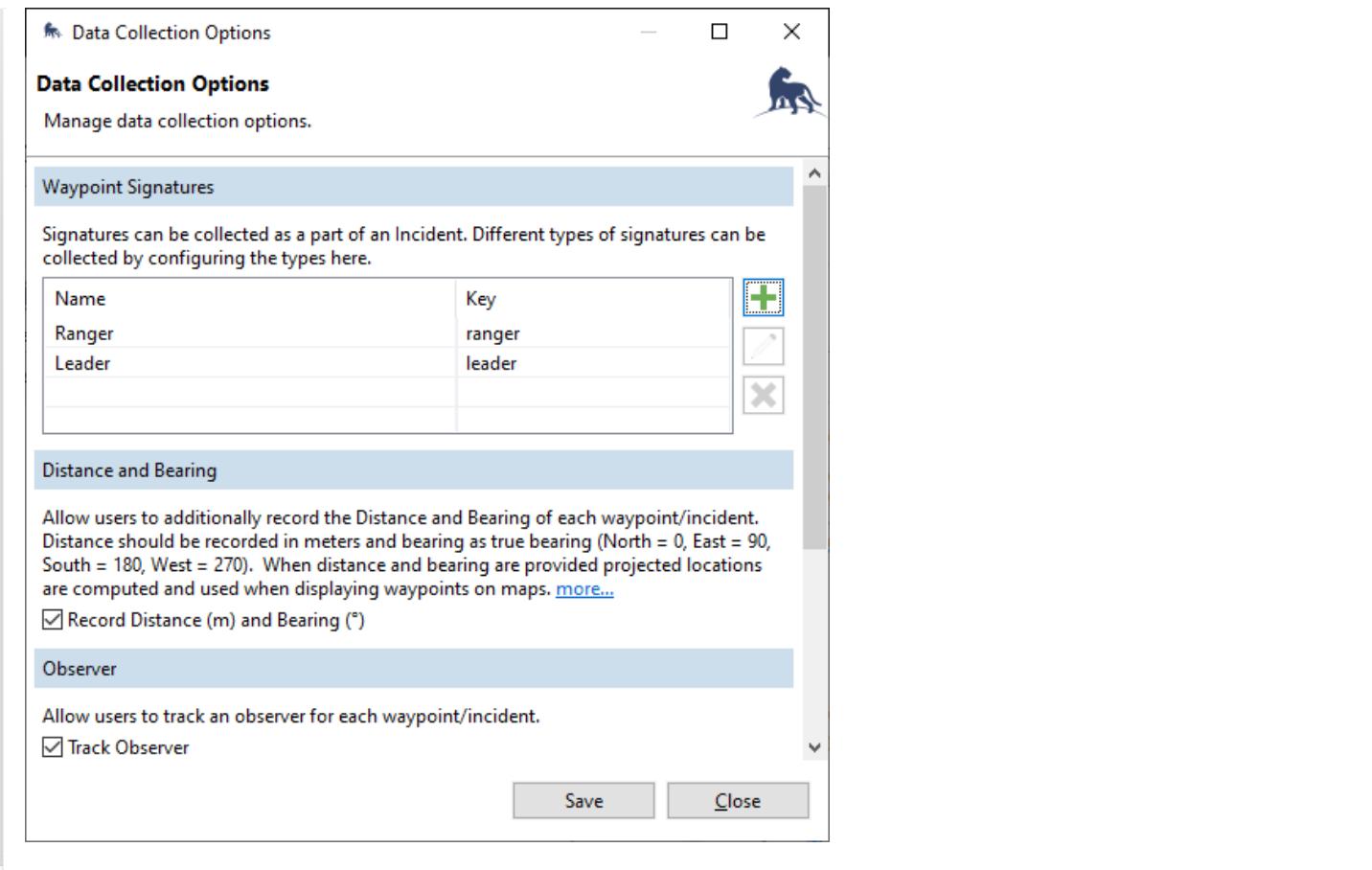
Date of birth
Fri 1978/07/28

6.2.6. DATA COLLECTION OPTIONS

The **Data Collection Options** dialog provides several additional settings for data collection. It can be reached using the **Field Data Options...** option on the **Field Data** menu.



The dialog supports signature configuration, activation of distance and bearing and a feature to allow the user to be specified for each incident.



6.2.6.1. Signatures

SMART Mobile can capture signatures as part of an incident. Once configured on the **Data Collection Options** dialog, they can be enabled on the **Configured Data Model** dialog for a category:

Configured Data Model

Configured Data Model

Editing data model configuration



Configurable Model Device Settings SMART Connect (Classic Only)

English [en]**

Properties Help Content

Display Name: Domestic Animals

Category: Domestic Animals - Human Activity

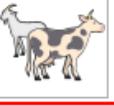
Options:

- Attachments allowed
- Photo Required

Classic Options:

- Collect multiple observations
- Record single GPS point

Display Mode: Text

Image: Data Model (Default Image)  ⚠ SVG and PNG images formats are ONLY supported in SMART Mobile

Signatures:

<input checked="" type="checkbox"/> Ranger
<input type="checkbox"/> Leader

The 'Signatures' section is highlighted with a red rectangle.

In SMART Mobile, the signature can be entered by drawing on a canvas. The trash icon will clear the canvas:



Domestic Animals



Threat

Type of Domestic Animal



Number of Domestic Animals



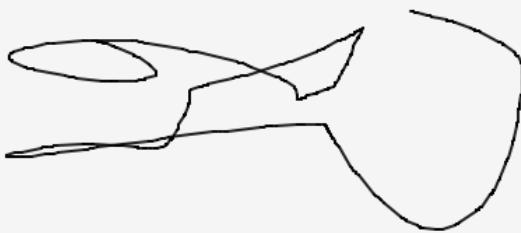
Action Taken Items



Ranger



Ranger



6.2.6.2. Distance and bearing

Checking **Record distance and bearing** shows two additional rows on the main sighting screen. These options will be interpreted by SMART desktop and relocate the position to a new location. In the example below, the fire is 125 meters away at a bearing of 45 degrees from North.



Patrol Demo



Distance (m)

125

Bearing (°)

45

Fire



Add observation



Save

6.2.6.3. Track observer

Checking **Track observer** shows an additional row on the main sighting page. This option allows selection of a specific observer (taken from the employee list) for each incident.

The image displays two screenshots of the SMART Mobile application interface. The left screenshot shows the 'Patrol Demo' screen, which includes a field labeled '* Observer' containing the text 'David Aliata', a button labeled 'Make observation', and a 'Save' button at the bottom. The right screenshot shows the 'Observer' screen, which lists three names: 'David Aliata', 'John Peter', and 'Lilian Wendy'.

6.3. Packages

SMART Desktop creates a Package to define how data should be collected by SMART Mobile. This package is installed on the device and collects data for the desktop.

6.3.1. PACKAGE LOGO

The package logo can be set in the Logo section of the **Conservation Area Properties** dialog. This dialog can be reached from the **Conservation Area** menu.

SMART Mobile supports a logo in PNG, JPG or SVG format. SVG format is recommended, since it will look good at all screen resolutions.

Conservation Area Properties

Properties related to the Conservation Area.

Identifier: SMART

Name: Example Conservation Area

Description: Training Database

Designation:

Organization:

Point of Contact:

Country / Location:

Owner:

Logo: 

Fallback Language: English [en]

Supported Languages:

Unique System ID: 8f7fbe1b201a4ef4bda814f5581e65ce

When viewed on the device, the logo will display alongside the Project title.

Projects



Patrol Demo

2022/07/22 14:44:18



Connect



Projects



Map



Settings

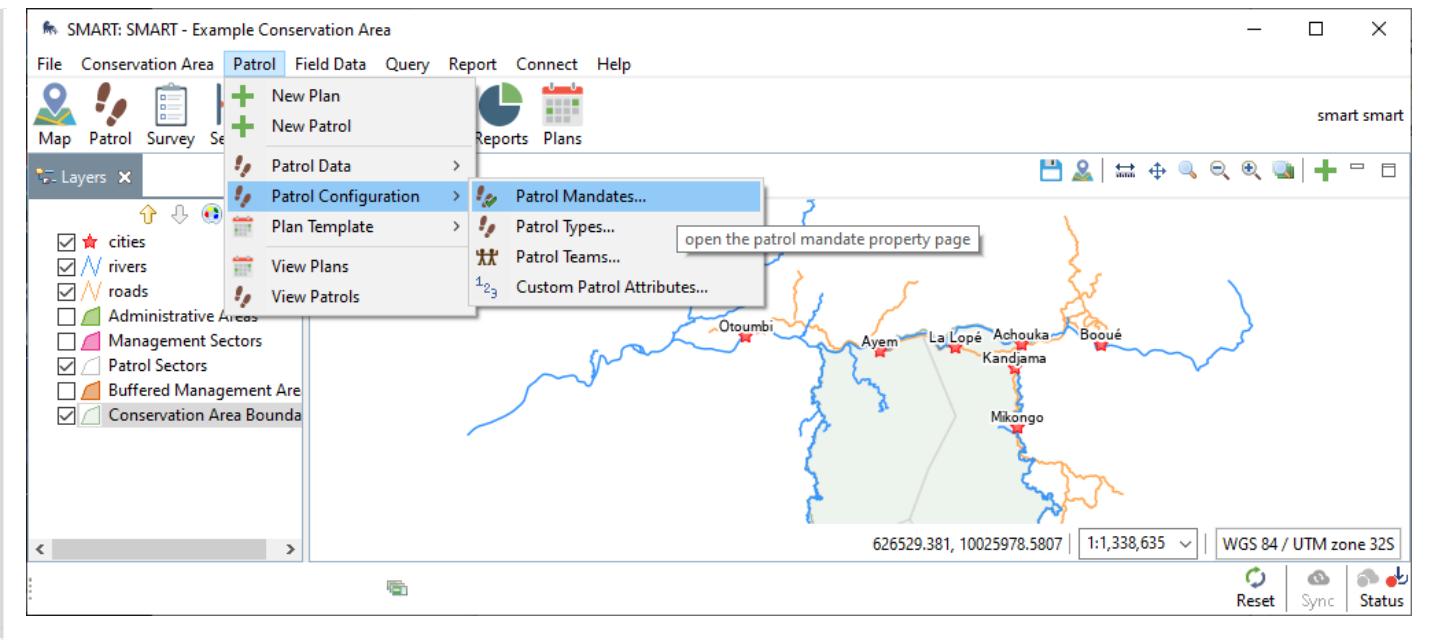
Note that all packages in a conservation area will share the same logo.

6.3.2. PACKAGE TYPES

There are several different package types: Patrol, Survey, Collect & Independent incidents.

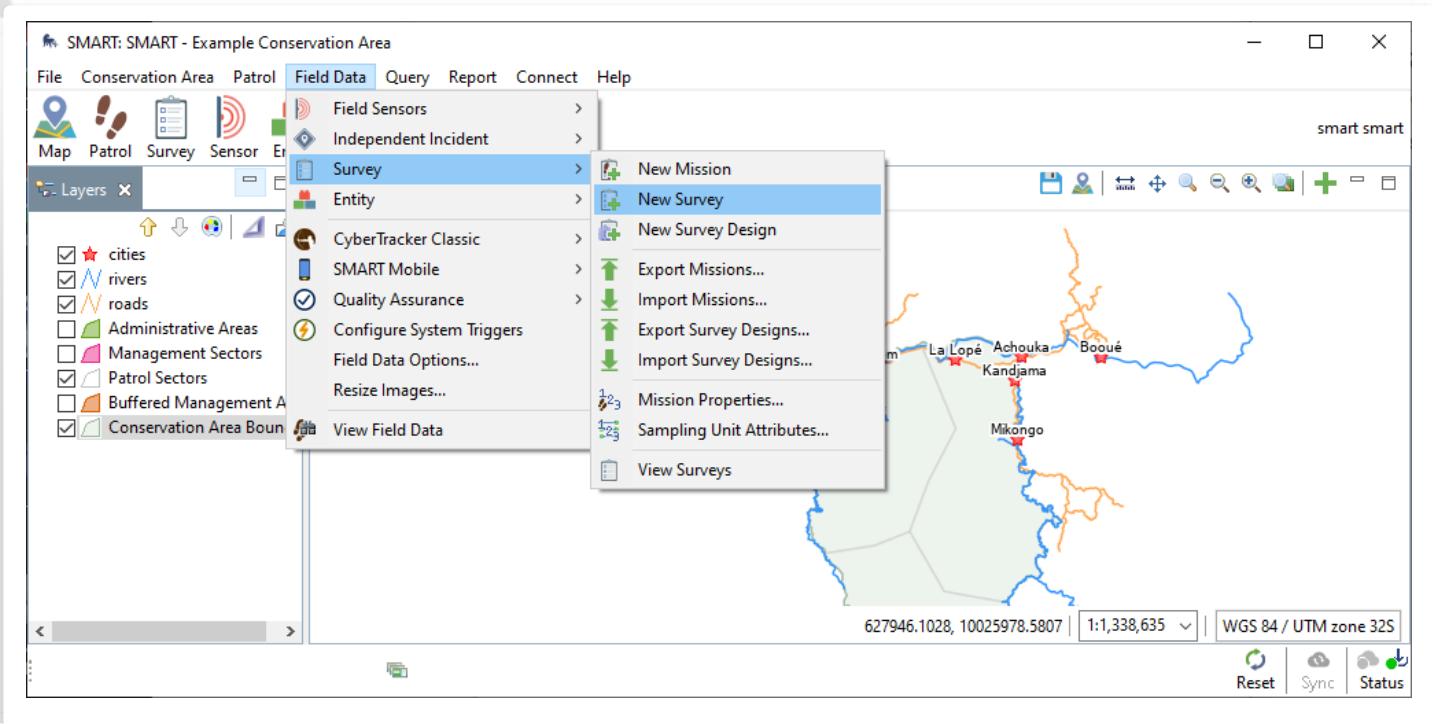
6.3.2.1. Patrol package

Patrol packages support the capture of a patrol. A Patrol is a collection of observations which are grouped together because they share certain properties. Patrols are configured on the desktop from the Patrol menu and the package itself supports numerous metadata properties, e.g. Transport Type, Team, Mandate, etc. Patrol packages also support independent incidents, which can be made during or outside of a patrol.



6.3.2.2. Survey package

Survey packages are similar to Patrol packages. They represent a collection of observations grouped together. Surveys can be configured from the Survey submenu off Field Data. Survey packages also support independent incidents, which can be made during or outside of a survey.



6.3.2.3. Collect package

Collect packages are designed for public use and require users to be online. The SMART Mobile user interface is simplified and provides more limited configuration options.

6.3.2.4. Independent Incident Package

Independent incident packages support the entry of simple one-off observations. The SMART Mobile user interface disables Patrol and Survey options, but is otherwise identical.

6.3.3. MODEL SETTINGS TAB

Model Settings are settings which apply to the entire package. These can be configured on the **SMART Mobile Packages** dialog. Note that **Incident Configuration** will only be displayed if the Independent Incident plugin is installed.

The screenshot shows the 'SMART Mobile Packages' dialog window. At the top, there's a title bar with the window name and a logo of a lion. Below the title bar, the main content area has a header 'SMART Mobile Packages' and a sub-header 'Configure the SMART Mobile package contents'. A navigation bar at the top of the content area includes tabs: 'Model Settings' (which is highlighted with a red border), 'Patrol Metadata', 'Basemap Settings', 'Connect', and 'Alerts'. The 'Model Settings' tab is active, displaying the 'Patrol Configuration' section. This section contains fields for 'Package Name' (set to 'Patrol Demo'), 'Configurable Model' (set to 'Demo Configurable Model'), and 'Device Settings' (set to 'Default (default)'). Below these are 'Custom Track Timer Settings' with four entries: Plane (Time (seconds) 10), Foot (Time (seconds) 300), Vehicle (Distance (meters) 50), and Boat (Distance (meters) 80). The 'Incident Configuration' section follows, containing a checked checkbox for 'Collect Independent Incidents' and a dropdown for 'Incident Model' set to 'Demo Configurable Model'. At the bottom right of the dialog are two buttons: 'Save' and 'Close', with 'Close' being highlighted with a blue border.

Custom Track Timer Settings allows customization of the track timer. The interval can be specified in meters or in seconds.

Example 1: an interval of 300 seconds means that a track point will be logged every 5 minutes. While infrequent this is appropriate for a slow moving party on foot.

Example 2: an interval of 50 meters means that a track point will be logged when the device has traveled at least 50 meters from the last logged point. This is useful for restricting the amount of data being logged.

The Distance interval generally uses more battery power, since the location must be constantly checked to see if the distance threshold has been reached.

The time interval should be longer the slower the transport type.

6.3.4. PATROL METADATA TAB

Patrol metadata is data that is associated with all the observations made in a patrol. Much of this data can be changed as the patrol progresses. For example, the mode of transport may change from foot to vehicle or employees may leave or join the party.

This configuration occurs at the package level:

**SMART Mobile Packages**

Configure the SMART Mobile package contents

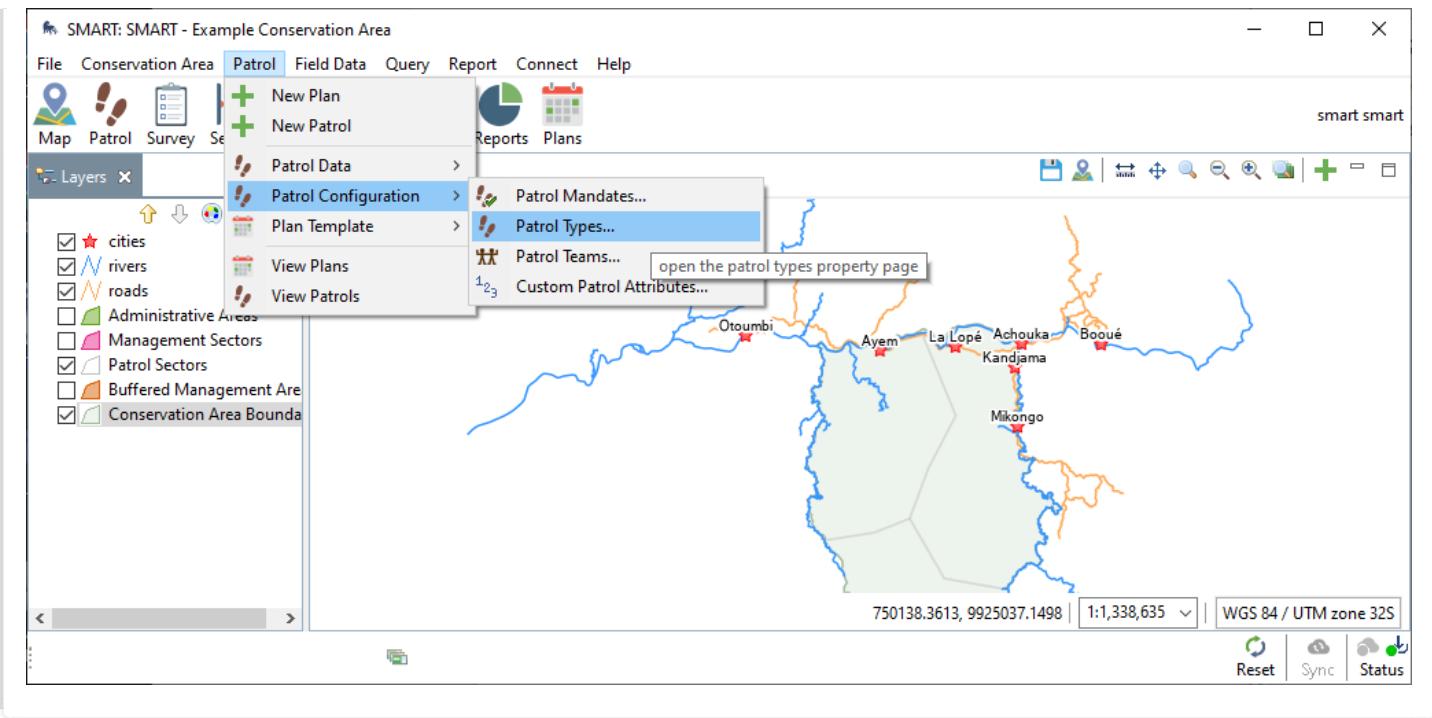
Model Settings **Patrol Metadata** Basemap Settings Connect Alerts

Metadata Field	User Selected	Fixed Value / Filters
Transport Type	<input checked="" type="checkbox"/>	Foot
Is Armed	<input checked="" type="checkbox"/>	<input type="radio"/> yes <input checked="" type="radio"/> no
Team	<input checked="" type="checkbox"/>	<none>
Station	<input checked="" type="checkbox"/>	<none>
Patrol Mandate	<input checked="" type="checkbox"/>	Anti-poaching
Patrol Objective	<input checked="" type="checkbox"/>	
Patrol Comment	<input checked="" type="checkbox"/>	
Members	<input checked="" type="checkbox"/>	Employee Filter: The employee list on the device will only include employees selected below. For teams, all members of the team will be added. <input type="checkbox"/> ----- Employee Teams ----- <input checked="" type="checkbox"/> Team 1 <input checked="" type="checkbox"/> Team 2 <input type="checkbox"/> ----- Individual Employees ----- <input type="checkbox"/> David Aliata <input type="checkbox"/> John Peter <input type="checkbox"/> Show Only Checked
Patrol Leader	<input checked="" type="checkbox"/>	David Aliata
Patrol Pilot	<input checked="" type="checkbox"/>	David Aliata

Save **Close**

6.3.4.1. Transport type

Patrol transport types are defined on the **Patrol Types & Transportation Options** dialog. This dialog can be reached via the Patrol menu:

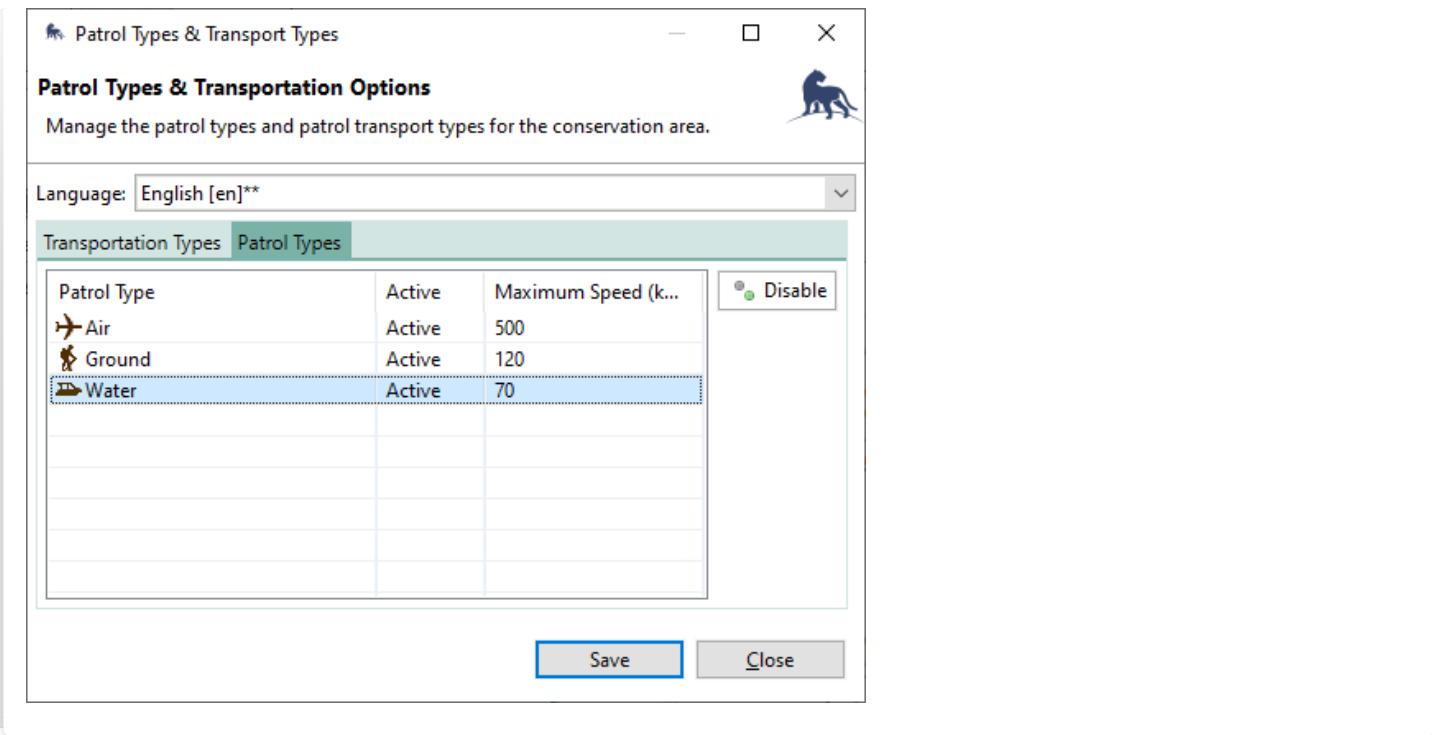


The **Transportation Types** tab defines the various types of transportation that can be selected in SMART Mobile:

Transport Type	Patrol Type	Active	Key
Foot	Ground	Active	foot
Vehicle	Ground	Active	vehicle
Boat	Water	Active	boat
Plane	Air	Active	air

The **Patrol Types** tab shows the possible types along with the maximum expected speed. This speed value is used to detect bad GPS readings. GPS readings are occasionally (though rarely) incorrect by several thousand meters and this can be detected if the reported speed from the GPS is very different from the expected speed of travel.

For example, if the GPS reports a ground speed of 1000 km/h while on foot, the location value will be excluded with the message "GPS Outlier detected". If this message is showing up unexpectedly, then it is likely that the transport type has not been selected properly.

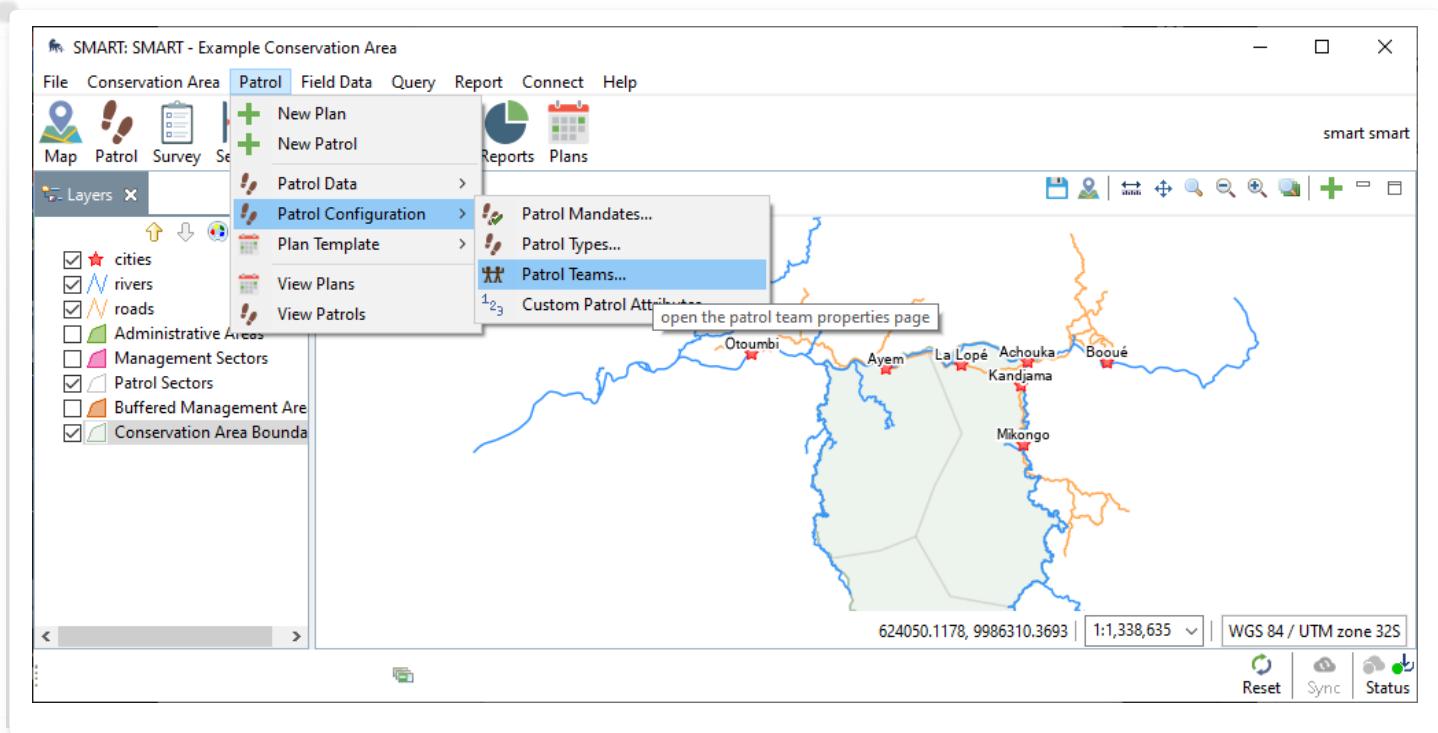


6.3.4.2. Armed

Armed is a BOOLEAN attribute. Once set for a patrol, it cannot be changed for the duration of the survey.

6.3.4.3. Team

Patrol teams are defined on the Patrol Teams dialog, which can be reached via the Patrol menu:



Patrol Teams

Teams
Manage the list of patrol teams. Double click to edit.

Language: English [en]**

Team	Mandate	Description	Key
Community...	Research a...	New Team Description	community...
Mobile Tea...	Anti-poac...	New Team Description	mobiletea...
Mobile Tea...	Anti-poac...	New Team Description	mobiletea...

Add **Edit Key** **Enable** **Delete**

Save **Close**

6.3.4.4. Station

Stations can be specified on the **Station List** dialog. This can be reached via the Conservation Area menu:

SMART: SMART - Example Conservation Area

File **Conservation Area** Patrol Field Data Query Report Connect Help

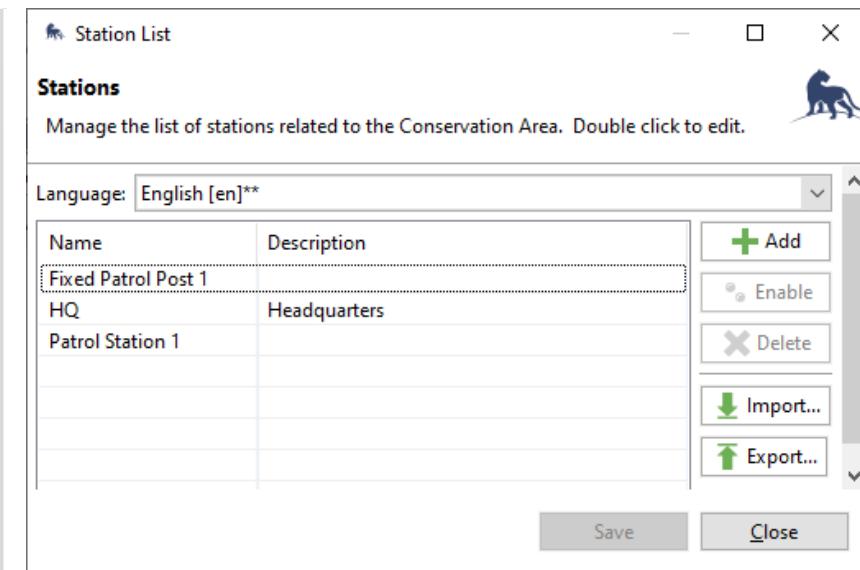
Map Layers

- Conservation Area Properties...
- Agency and Rank List...
- Employee List...
- Station List...**
- Manage Projections...
- Define Area Boundaries...
- Manage Basemaps...
- Manage Icon Sets...
- Data Model...
- Configurable Model...
- Delete Conservation Area

Queries Reports Plans

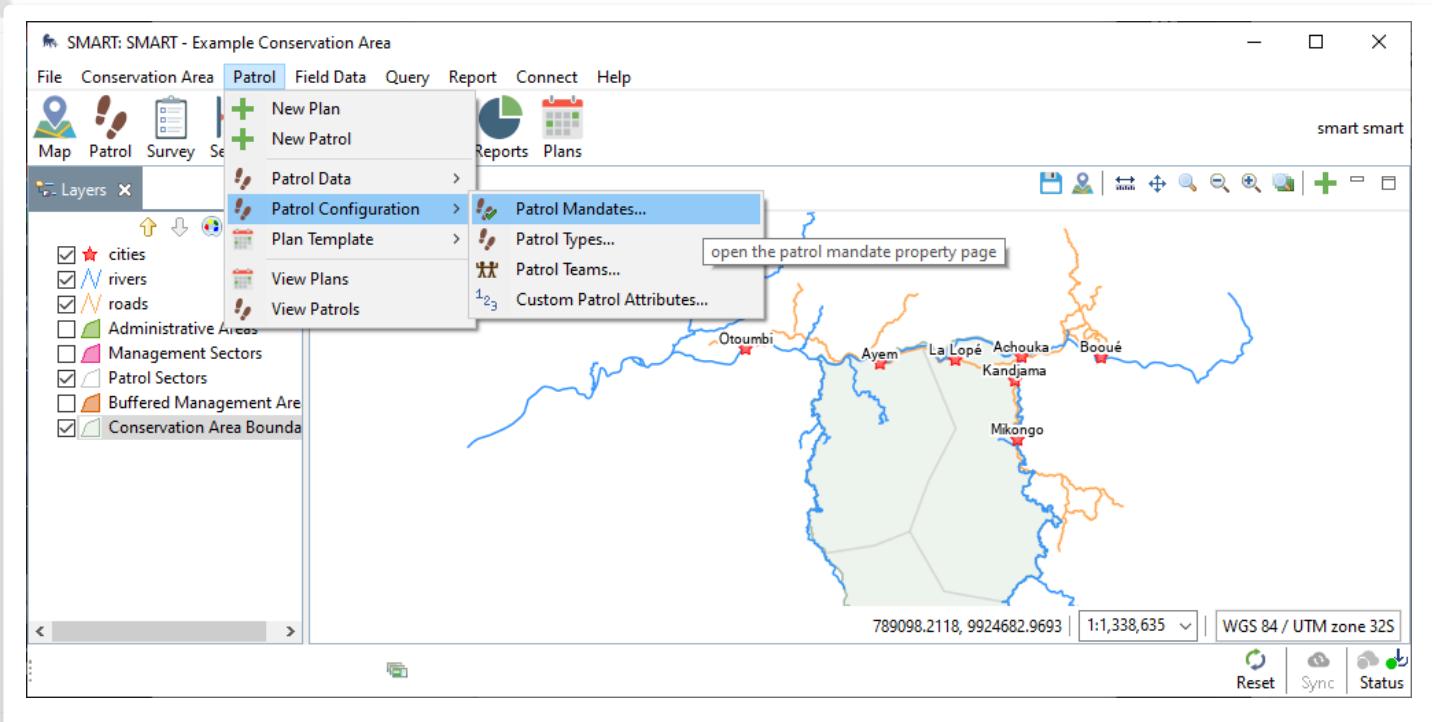
Map View

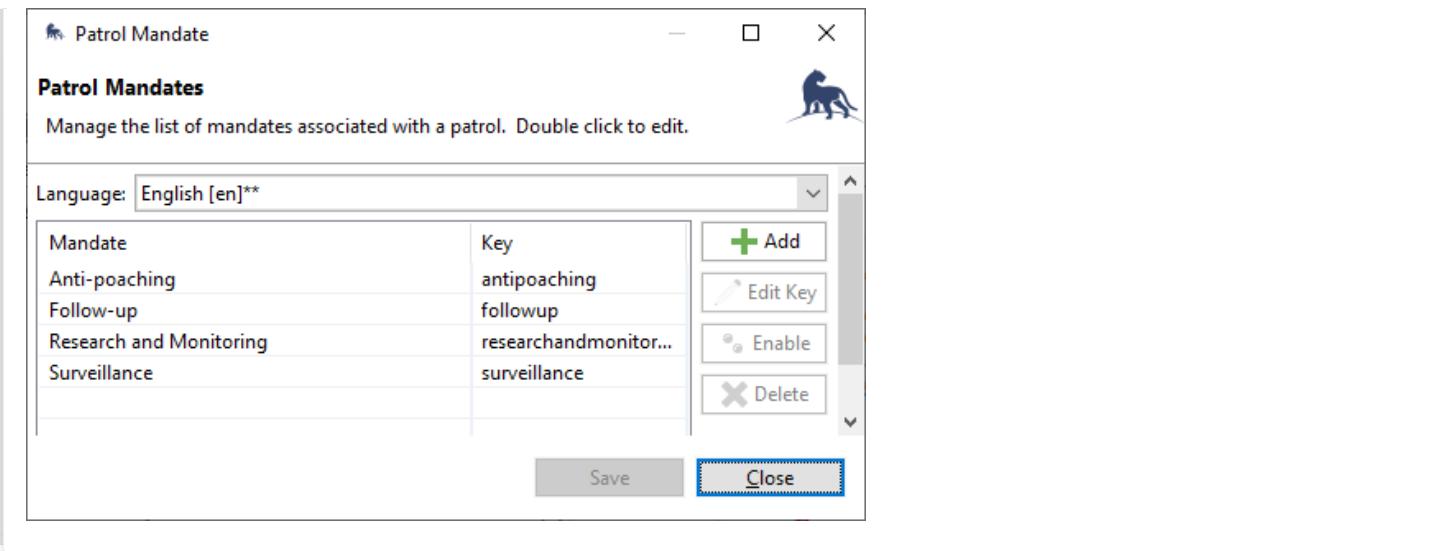
smart smart



6.3.4.5. Mandate

Mandates can be specified on the **Patrol Mandates** dialog. This can be reached via the Patrol menu:





6.3.4.6. Objective

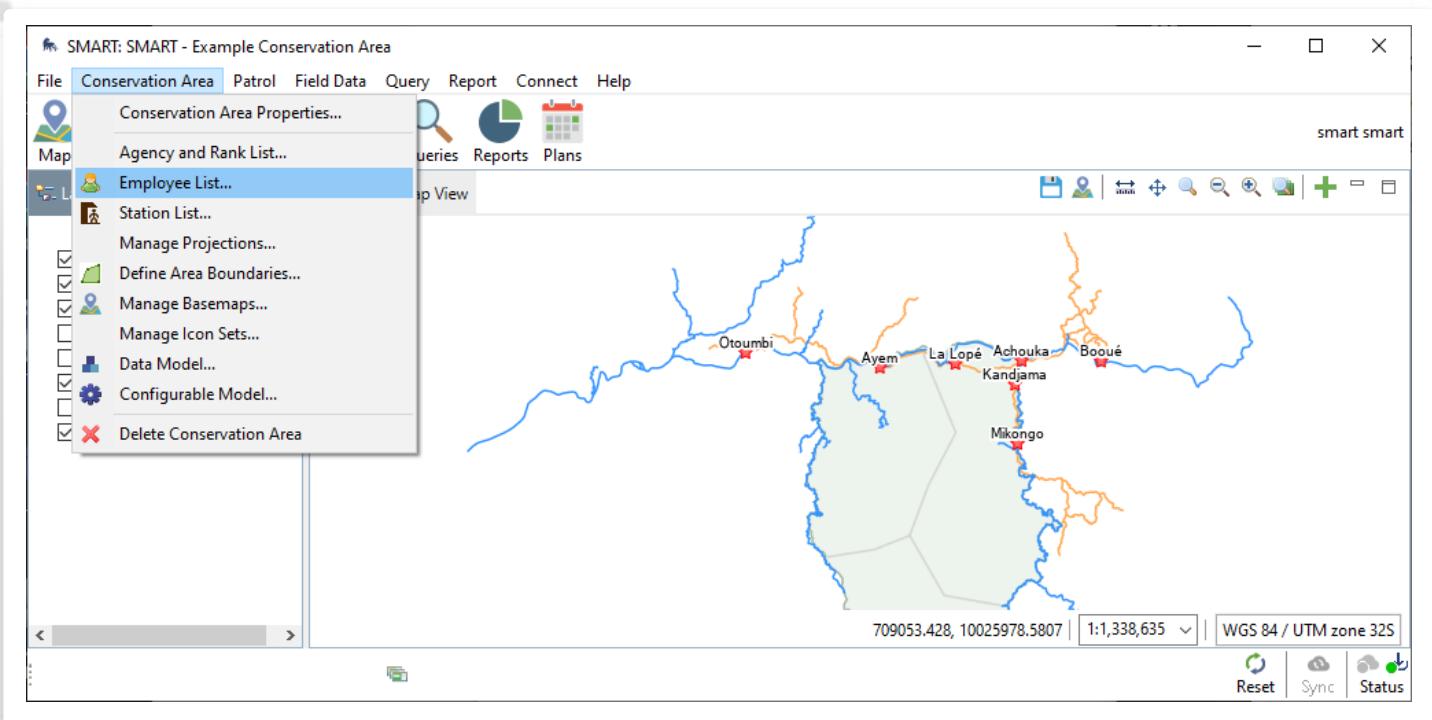
Patrol Objective is a freeform text attribute.

6.3.4.7. Comment

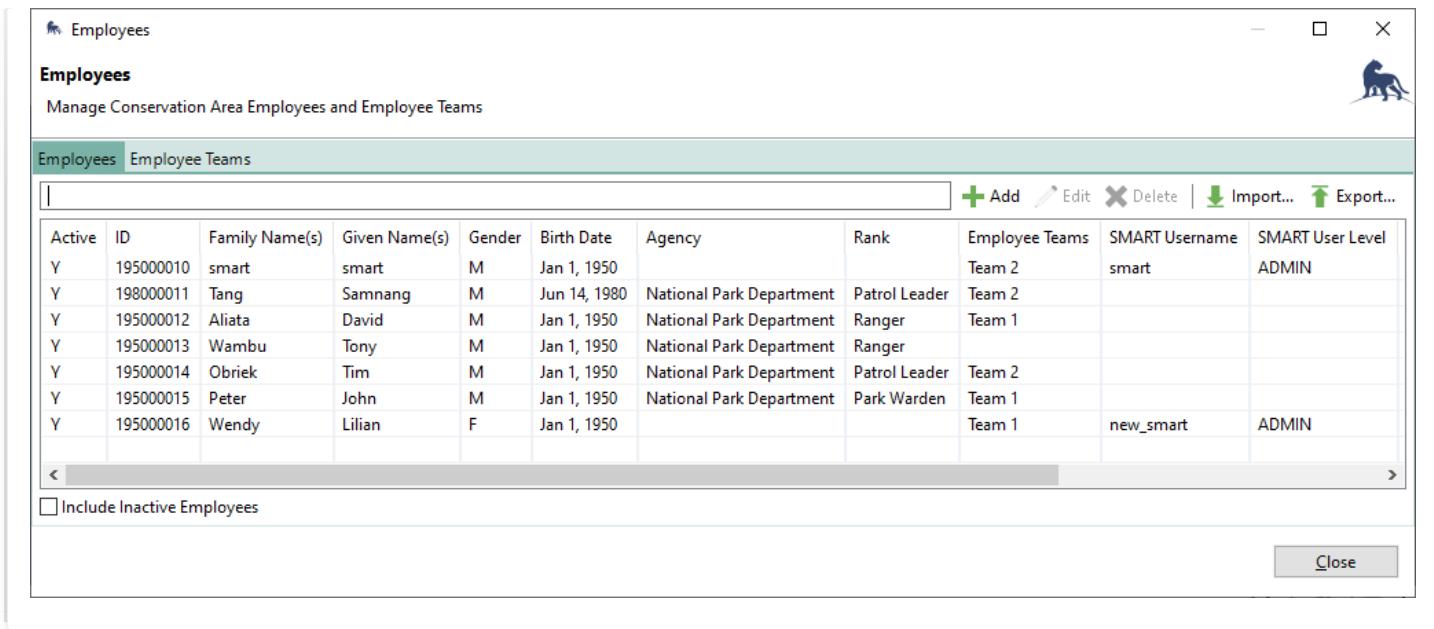
Patrol Comment is a freeform text attribute.

6.3.4.8. Members

Employees and their teams can be specified using the **Employees** dialog. This dialog is available via the Conservation area menu:



Employees may also belong to one or more teams. This can be specified on the **Employee Teams** tab:

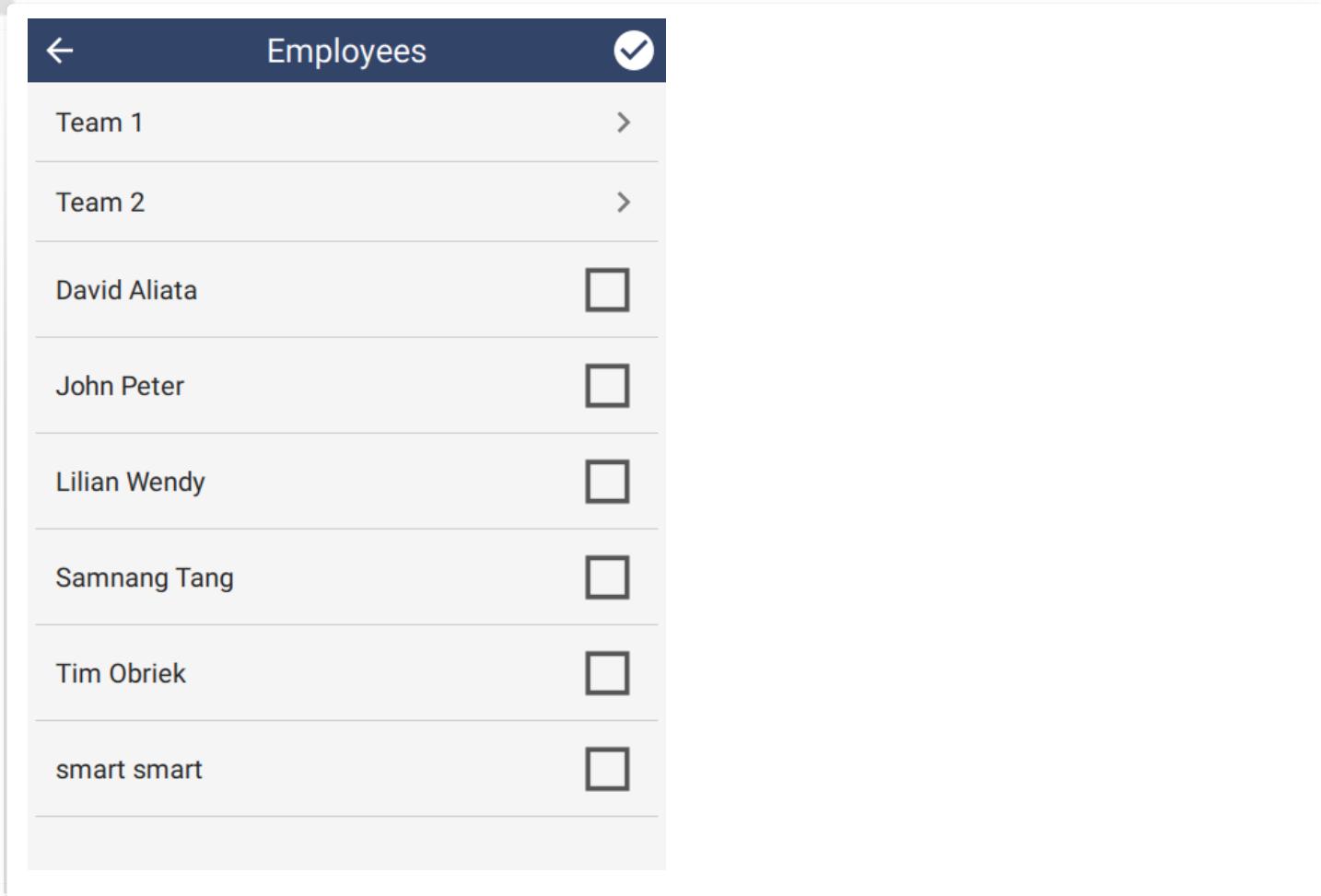


The screenshot shows a software window titled "Employees" with a sub-header "Manage Conservation Area Employees and Employee Teams". The main area displays a table of employee data with the following columns: Active, ID, Family Name(s), Given Name(s), Gender, Birth Date, Agency, Rank, Employee Teams, SMART Username, and SMART User Level. The data includes the following rows:

Active	ID	Family Name(s)	Given Name(s)	Gender	Birth Date	Agency	Rank	Employee Teams	SMART Username	SMART User Level
Y	195000010	smart	smart	M	Jan 1, 1950	National Park Department	Patrol Leader	Team 2	smart	ADMIN
Y	198000011	Tang	Samnang	M	Jun 14, 1980	National Park Department	Ranger	Team 2		
Y	195000012	Aliata	David	M	Jan 1, 1950	National Park Department	Ranger	Team 1		
Y	195000013	Wambu	Tony	M	Jan 1, 1950	National Park Department	Ranger			
Y	195000014	Obriek	Tim	M	Jan 1, 1950	National Park Department	Patrol Leader	Team 2		
Y	195000015	Peter	John	M	Jan 1, 1950	National Park Department	Park Warden	Team 1		
Y	195000016	Wendy	Lilian	F	Jan 1, 1950			Team 1	new_smart	ADMIN

At the bottom left is a checkbox labeled "Include Inactive Employees", and at the bottom right is a "Close" button.

When specifying employees, teams will be listed first. This is primarily used to help find team members quickly:



The screenshot shows a modal dialog titled "Employees" with a header containing a back arrow, the title, and a checkmark icon. The main content is a list of names, each preceded by a checkbox:

- Team 1 >
- Team 2 >
- David Aliata
- John Peter
- Lilian Wendy
- Samnang Tang
- Tim Obriek
- smart smart

6.3.4.9. Leader

After the employees have been specified, the **Patrol Leader** attribute can be set. Note that the leader must be one of the employees in the employee list. If the leader is set and then that employee is removed from the list of employees, they will be removed from the leader attribute.



Start patrol



* Patrol Transport Type

Foot

*

Is Armed



Team

Station

* Mandate

Research and Monitoring

Objective

Comment

* Employees

David Aliata, John Peter, Lilian Wendy

* Leader

Lilian Wendy**6.3.4.10. Pilot**

If the Patrol Transport Type attribute is set to Water or Air, then a **Patrol Pilot** attribute will become visible. Similar to the Leader attribute above, the pilot must be a member of the selected employees.



Start patrol



*

Is Armed



Team

Station

*

Mandate

Objective

Comment

* Employees

David Aliata, John Peter, Lilian Wendy

* Leader

Lilian Wendy

* Pilot

John Peter

6.3.5. BASEMAP SETTINGS TAB

SMART Mobile supports offline map layers, i.e. maps that work without a network connection. These are configured on the **Basemap Settings** tab of the SMART Mobile Packages dialog.

SMART Mobile Packages

SMART Mobile Packages

Configure the SMART Mobile package contents

Basemap Options

SMART Basemap Custom Files

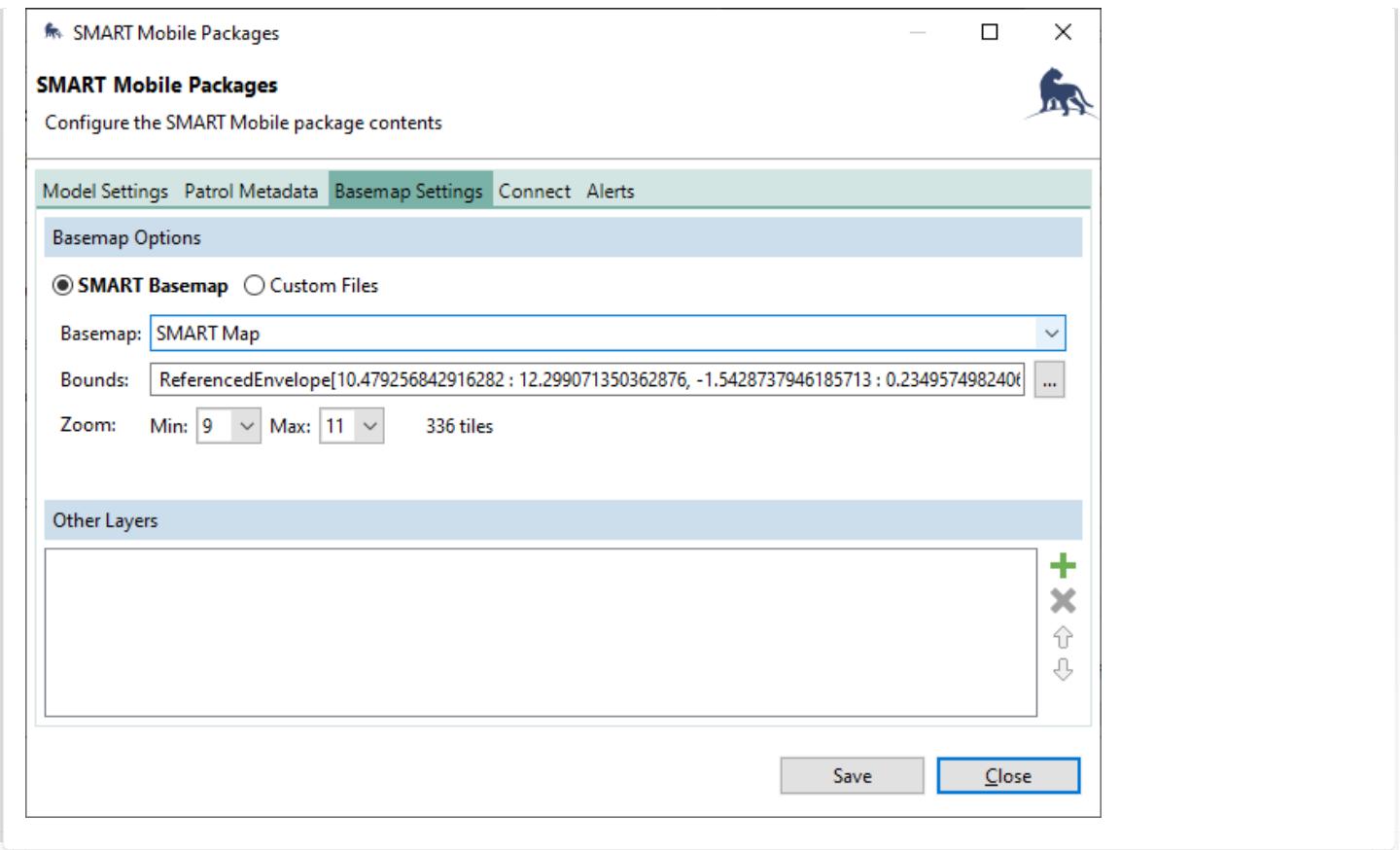
Basemap: SMART Map

Bounds: ReferencedEnvelope[10.479256842916282 : 12.299071350362876, -1.5428737946185713 : 0.2349574982406]

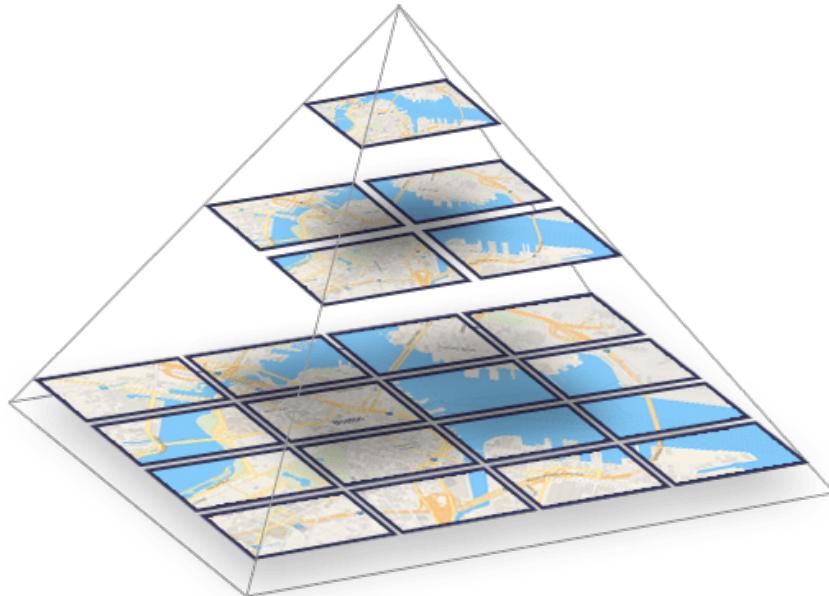
Zoom: Min: 9 Max: 11 336 tiles

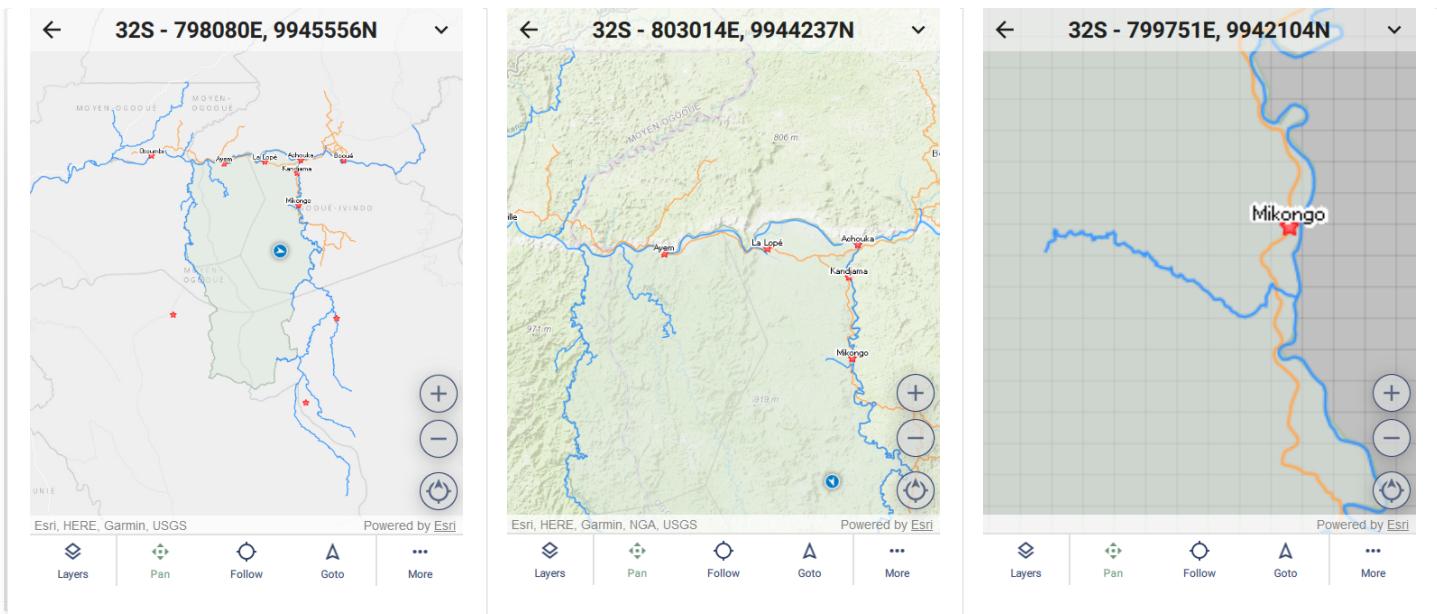
Other Layers

Save Close



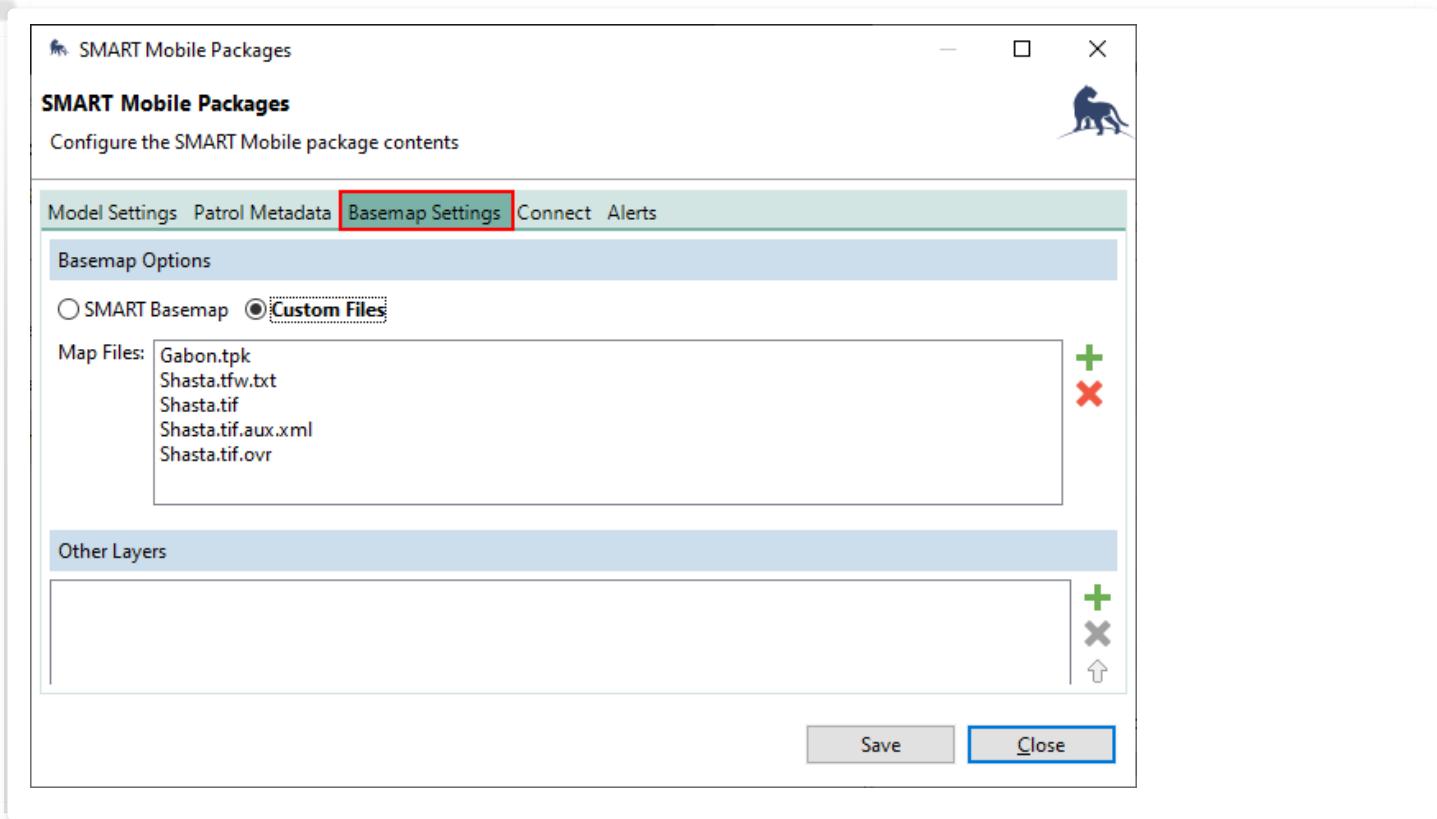
The **SMART Basemap** option will automatically generate an offline map from the SMART Desktop map view. In order to support high resolution and zooming, the map is captured at different zoom levels and segmented into tiles. More zoom levels means more tiles. The recommendation is to experiment with different zoom levels until the resolution is good enough and the map is reasonably sized:

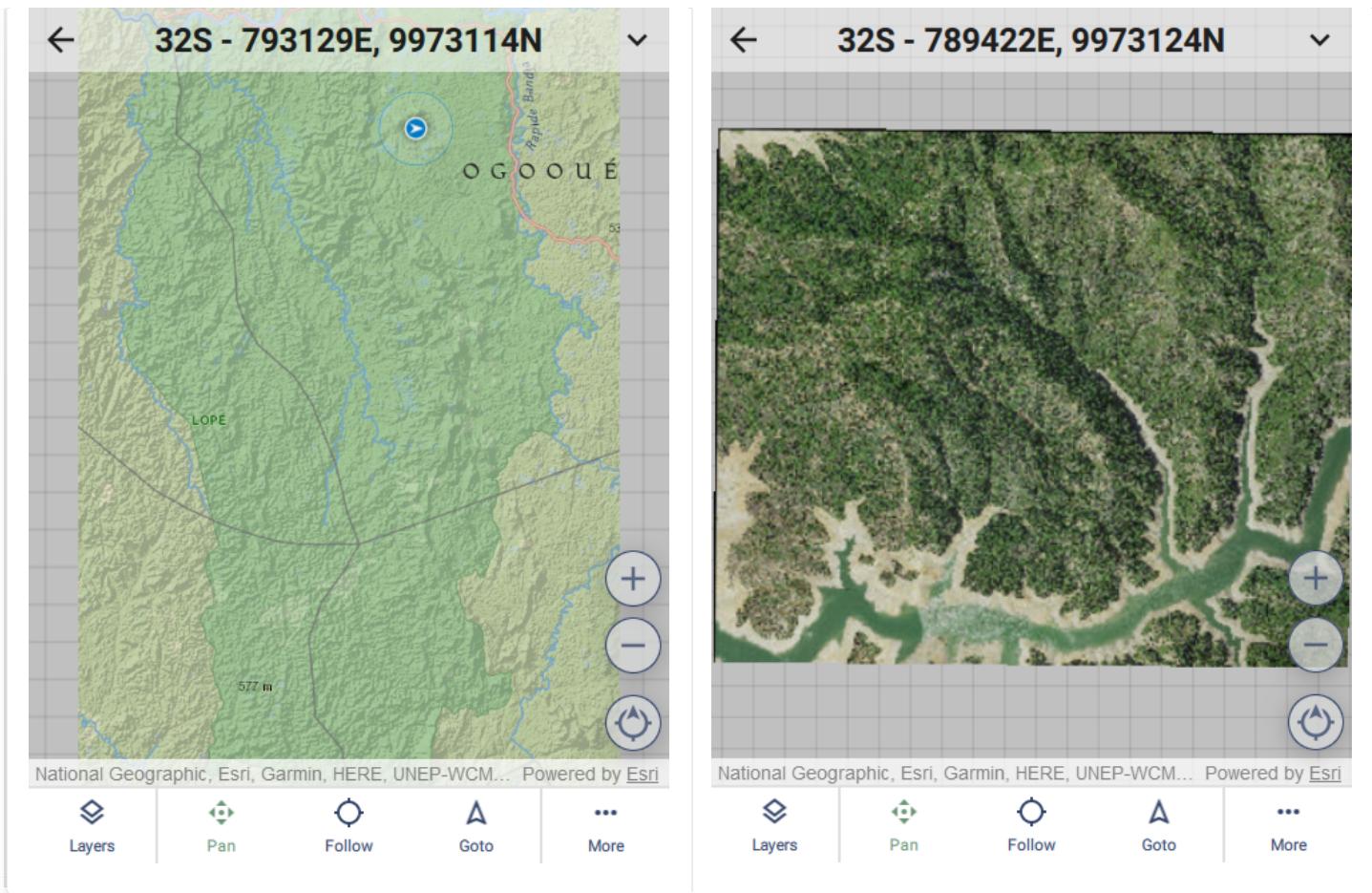




6.3.5.1. Custom files

If existing map files are available, then these can be used directly by selecting **Custom Files**. SMART Mobile supports SHP, GeoTIFF, ArcGIS TPK, ArcGIS VTPK, PNG, JPEG and KML.





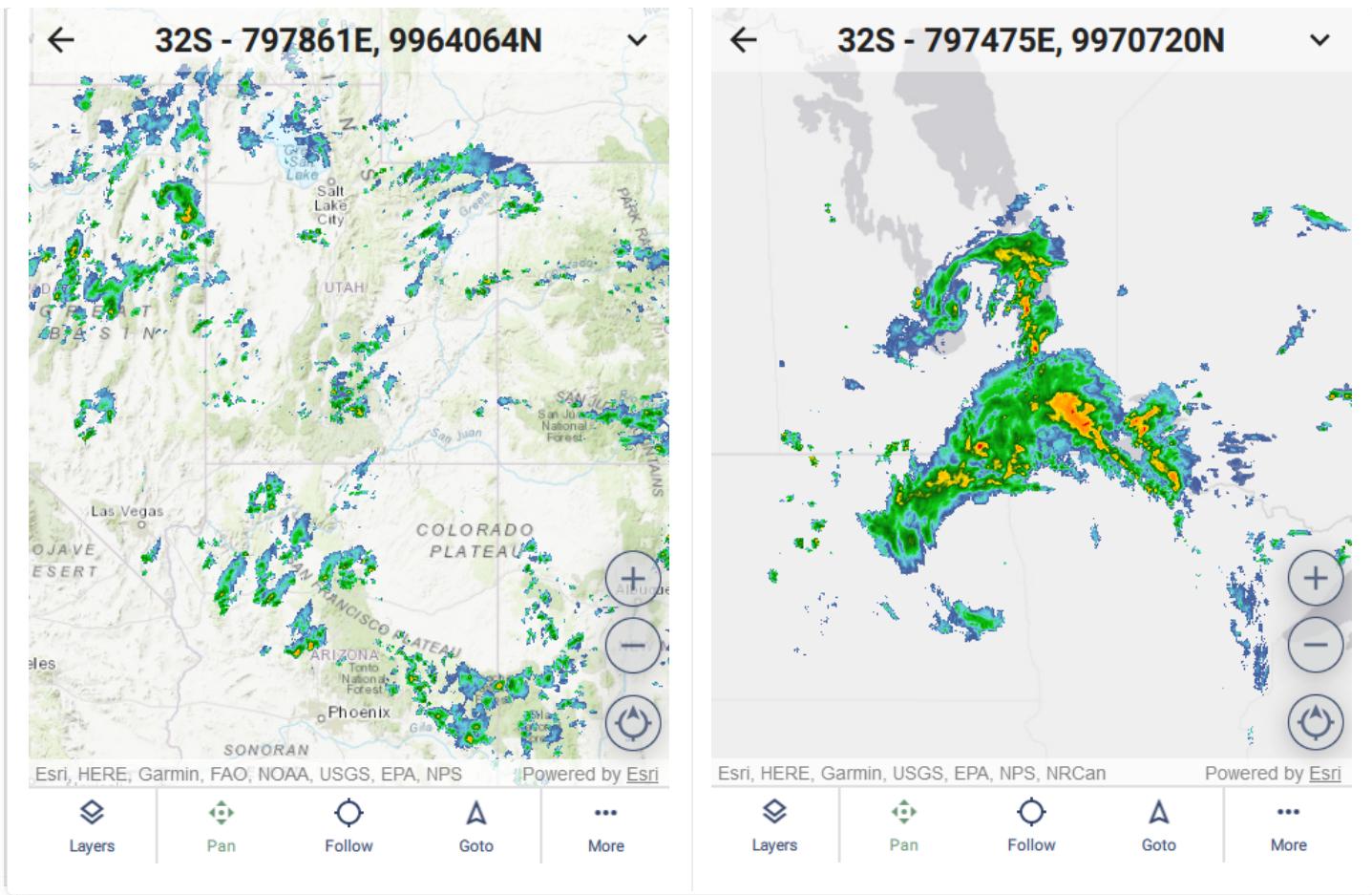
6.3.5.2. Other layers

SMART Mobile supports online Web Map Service layers. More information on this type of layer:

https://en.wikipedia.org/wiki/Web_Map_Service.

For example, a weather layer:

https://nowcoast.noaa.gov/arcgis/services/nowcoast/radar_meteo_imagery_nexrad_time/MapServer/WMServer:



6.3.6. CONNECT TAB

SMART Mobile can be configured to upload data to a Connect server. The **Connect tab** contains several configuration settings for this scenario.

SMART Mobile Packages

SMART Mobile Packages

Configure the SMART Mobile package contents

Model Settings Patrol Metadata Basemap Settings **Connect** Alerts

Data Uploads

If using this option all data will be sent to Connect, then imported into SMART Desktop through the data queue features. Users cannot plug the mobile device into the SMART Desktop to download data. An internet connection is required, and all data will remain on the device until an internet connection is acquired.

Upload Data To Connect

Automatically upload data every minutes

Position Updates

Position updates will appear on the SMART Connect web application Alerts Map. Position updates require the mobile device has an internet connection and remain on the device until an internet connection is acquired.

Send position updates every minutes as type

[refresh alert types](#)

Package URL

Send this link to users to access the package. Package must be uploaded to Connect before users can access it.

<https://cybertrackerwiki.org/applink-smart?eyJzZXJ2ZXIiOiJodHRwczpcL1wvY29ubmVjdCucmVmcmFjdGlvbnMubmV0Ojg0NDNcL3NlcnZlclwvbm9hXC9jeWJlcnRyYWNRzXJcL3BhY2thZ2VzXC8xMzk2ODI0MjQ2MjE0OTAzOWZkZThkN2I4MmMxNWM1NilslmNvbm5IY3Rv> 

By default users will be prompted for a Connect username/password before they can access the package. You can make the package public (no username/password required) but this means anyone can access the package. This includes all data inside the package (employees, data model etc) and the necessary information to upload data to Connect. Use with care.

Public Package

Save **Close**

6.3.6.1. Data uploads

Data uploads respect the **Upload requires WiFi** setting.

If **Upload Data To Connect** is *checked*, then the data is expected to be automatically uploaded to the Connect server over the network. **Export data** will send any data that has not already been sent and also clear the history.

If **Upload Data to Connect** is *unchecked*, then the data is expected to be retrieved from the device over a USB cable. **Export data** will create one or more json files which can be downloaded from the desktop.

If **Automatically upload data every n minutes** is *checked*, then data will be sent to the server at regular intervals. While the data reaches the server more quickly with this approach, it cannot be edited after saving.

If **Automatically upload data every n minutes** is *unchecked*, then data will not be sent to the server. **Export data** will send all data to the server at once. An advantage of this approach is that incidents can be edited before they have been sent to the server.



MAP

SETTINGS



EXPORT DATA



HISTORY



REPORT INCIDENT

START PATROL

6.3.6.2. Position updates

Position updates are treated as data uploads and respect the **Upload requires WiFi** setting.

If **Send position updates every n minutes as type X** is checked, then SMART Mobile will send a location to the Connect server over the network at the specified interval. This is useful for tracking the last known location of the device.

6.3.6.3. Package URL

The **Package URL** is a link to the package on the Connect server. See [package installation](#).

6.3.7. ALERTS

Alerts are treated as data uploads and respect the **Upload requires WiFi** setting.

When an incident is saved, each of the observations within it are matched against the list of alerts. For example, if a Fire observation is made, then an event is sent to the Connect server as soon as it is saved:

SMART Mobile Packages

SMART Mobile Packages

Configure the SMART Mobile package contents

Model Settings Patrol Metadata Basemap Settings Connect **Alerts**

Alerts

	Alert Type	Importance	Observation
Demo	1	Fire -> Human Activity	

refresh alert types

Save Close

Alerts can be viewed on a map in real-time:

SMART Connect

Select Alerts to Display

Dates: within 24 hours (Fri Jul 22 2022 to Fri Jul 22 2022)

Include Types:

- Demo
- Guacamayas
- Health Incident
- Illegal entry
- Illegal fishing
- Patrol
- Position

Include Status:

- Active
- Disabled

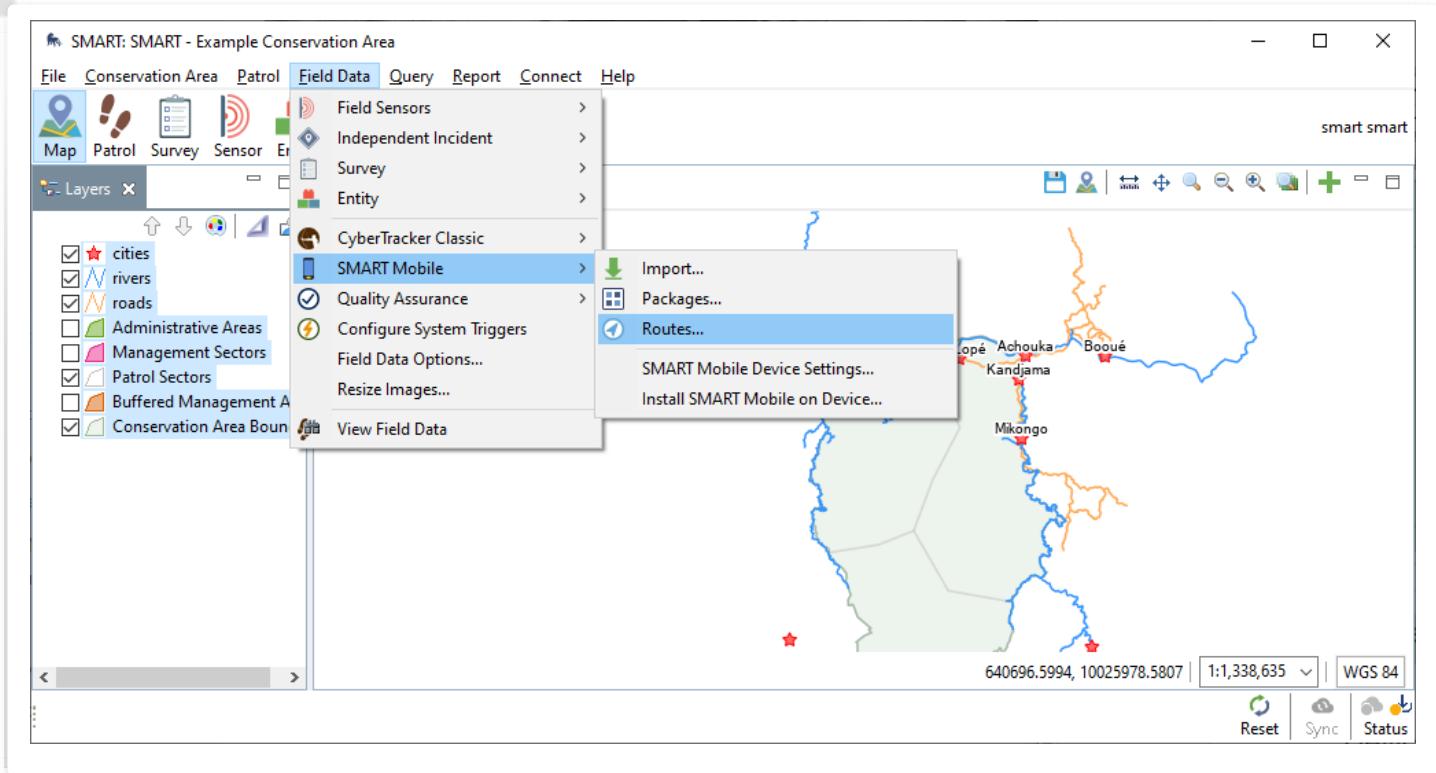
Include Importance:

- 1(Highest)
- 2

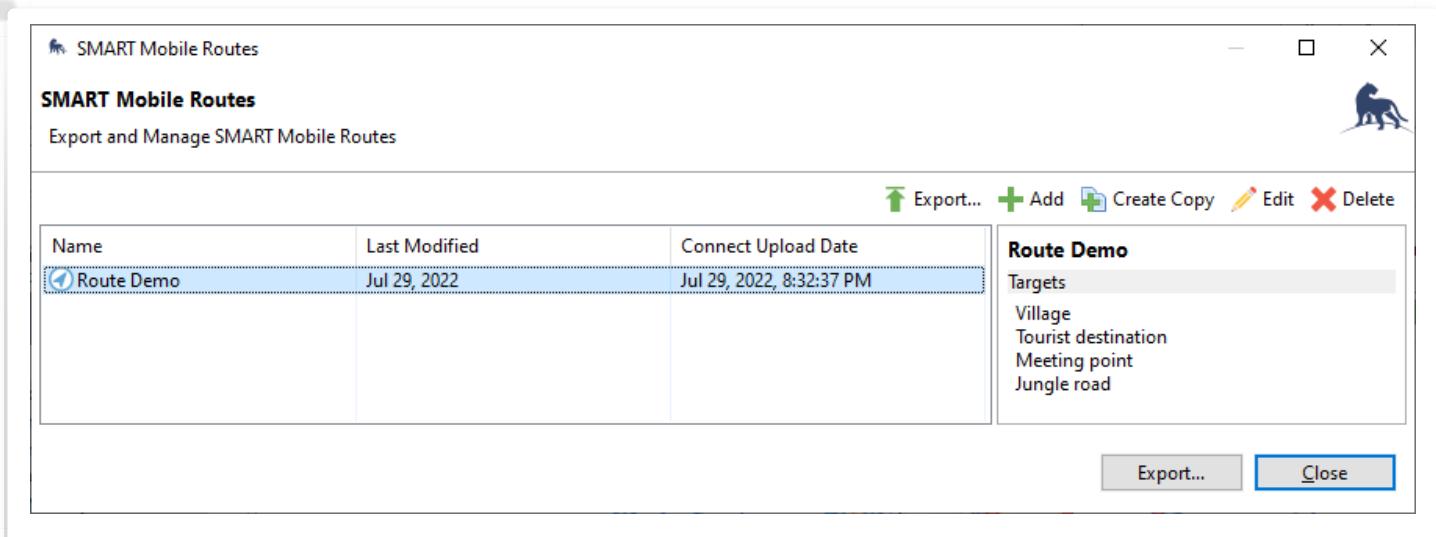
Refresh Create Alert Manage Alerts Export Image Last Updated 22/7/2022 20:46:47 Alerts Shown:4

6.4. Routes

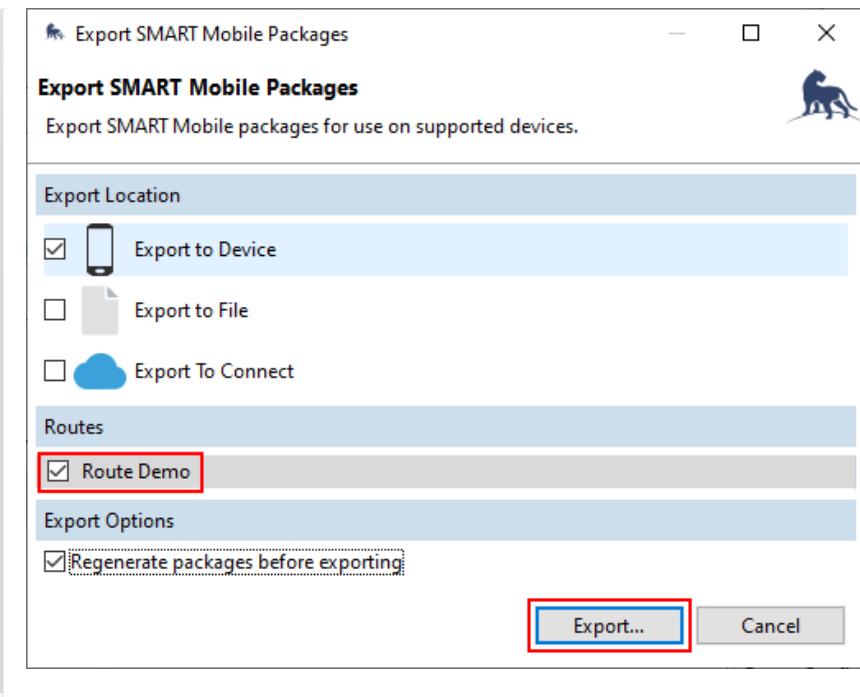
Routes are points and lines which can be overlaid on a map. They typically represent points of interest or paths which need to be followed. The **Routes...** menu will open the SMART Mobile Routes dialog.



Routes work in the same way as Packages - they can be exported to a device using a USB cable or a Connect server.

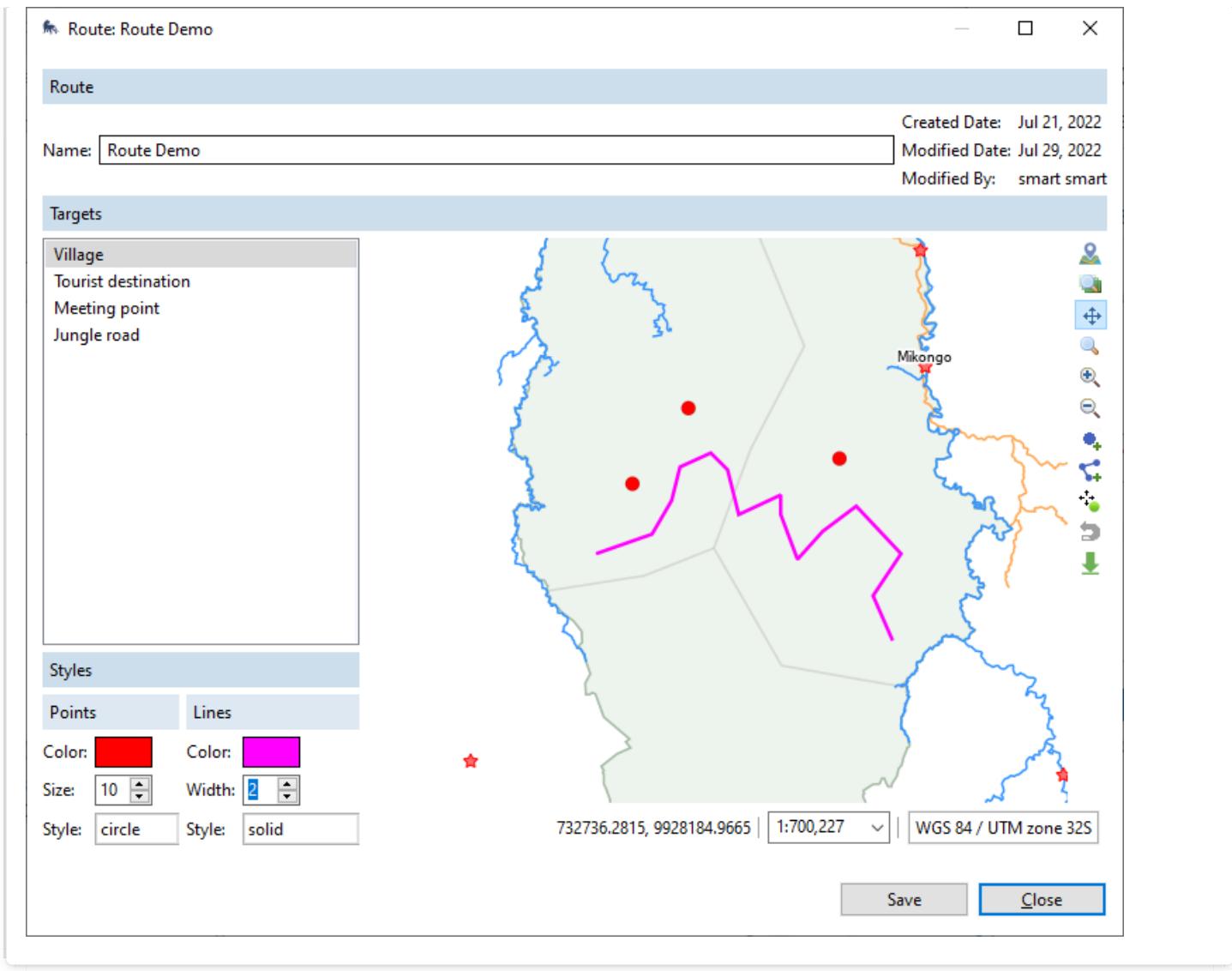


They can also be exported at the same time as a Package using the **Export SMART Mobile Packages** dialog:



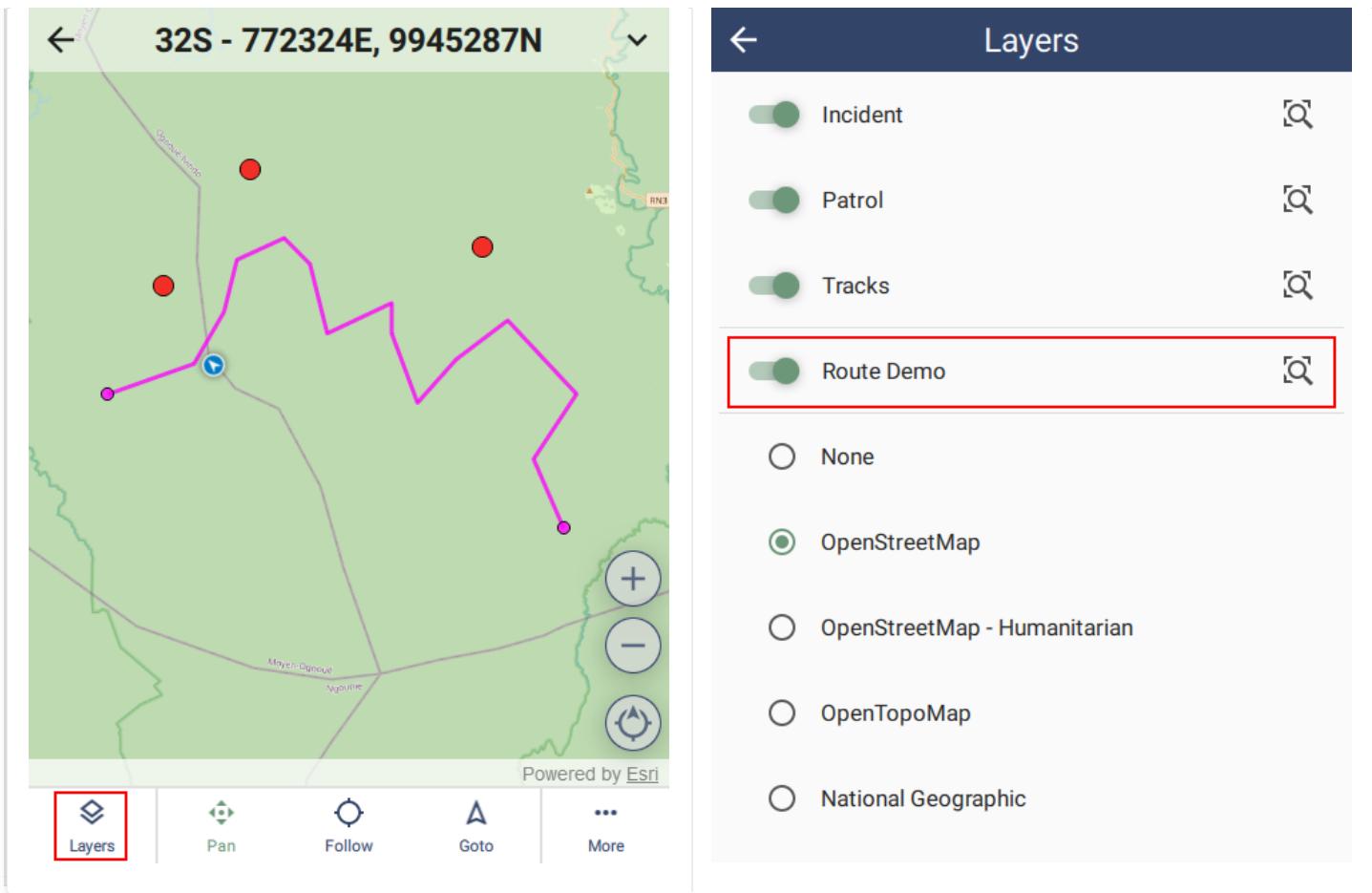
6.4.1. CREATING ROUTE POINTS AND LINES

Routes are composed of points and lines. These can be configured on the Route editing dialog (clicking **Edit** on the **SMART Mobile Routes** dialog):



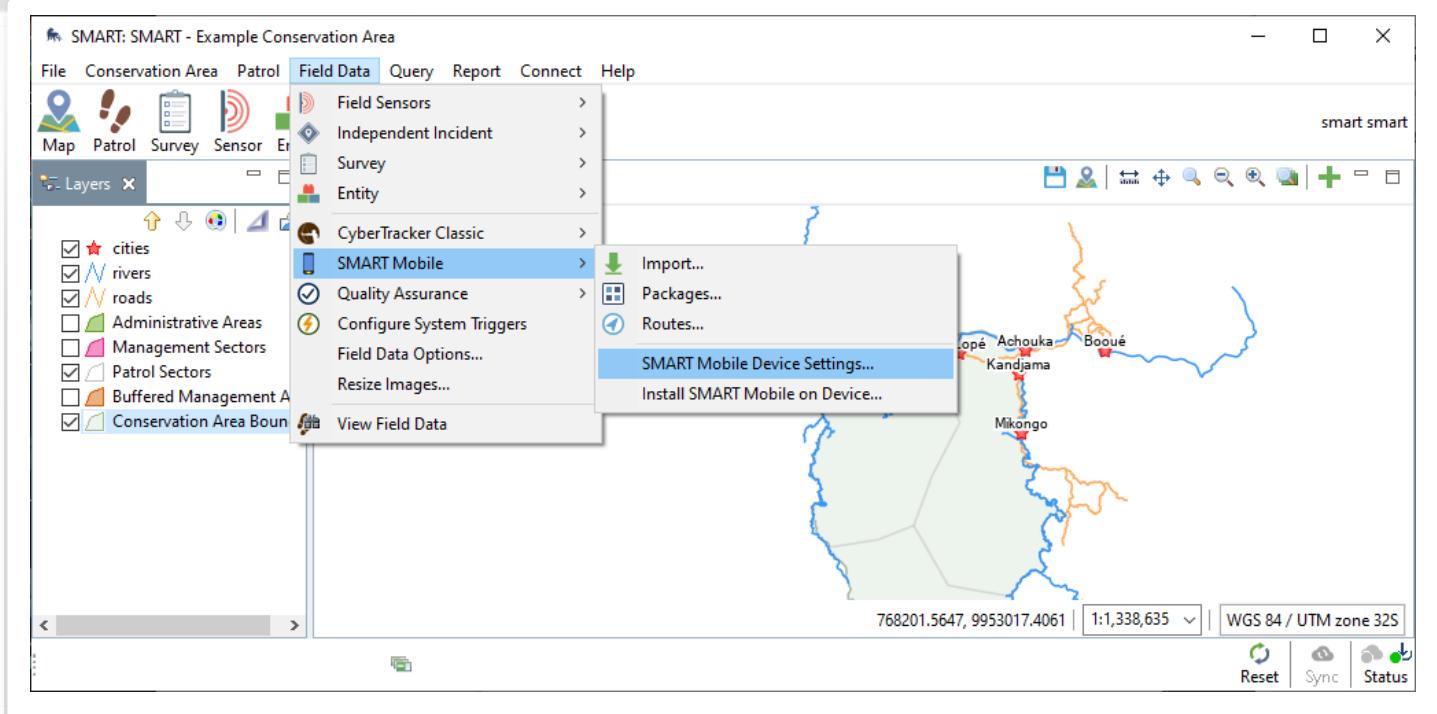
6.4.2. VIEWING ROUTES

Routes are visible in SMART Mobile on the map. They can be enabled and disabled on the Layers page. More information on routes can be found in the [Map section](#).



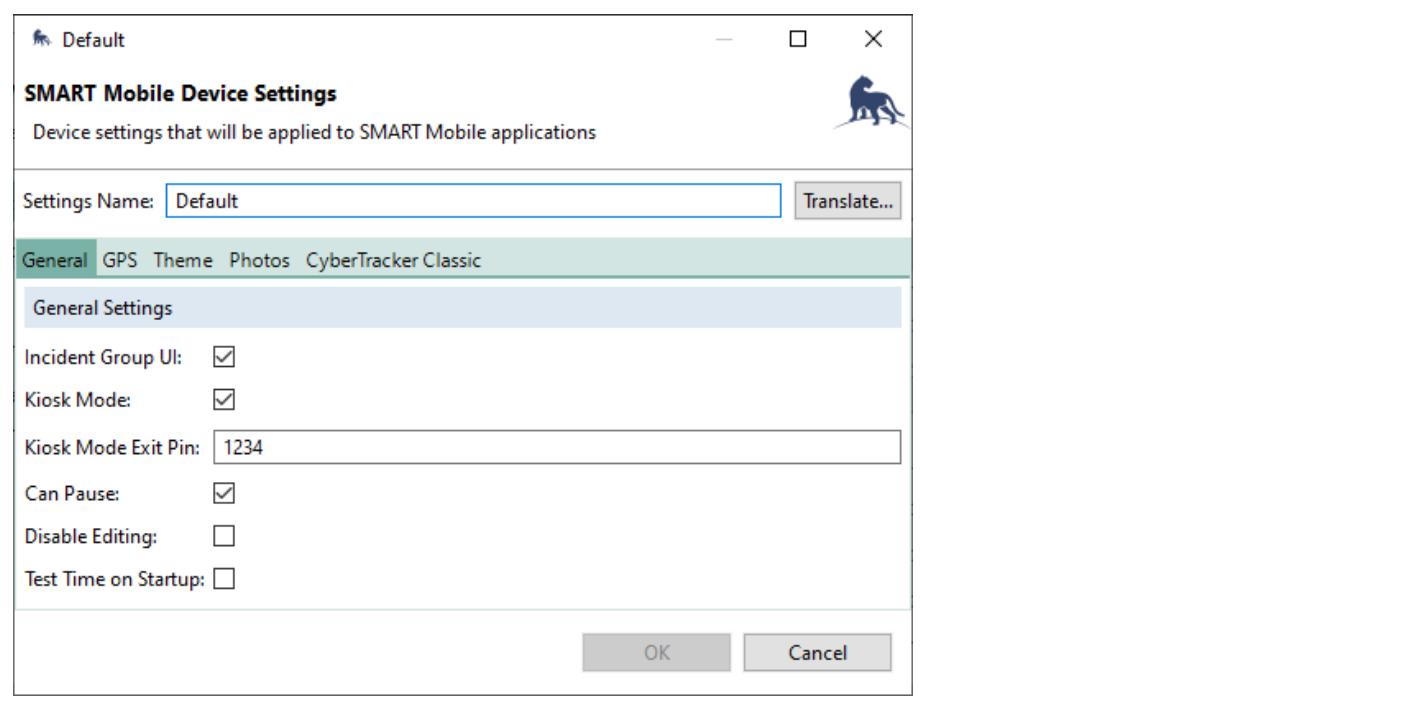
6.5. Device Settings

Device Settings are part of the SMART Mobile configuration. These can be reached from the **SMART Mobile Packages** dialog or from the SMART Mobile menu. It is possible to have several different settings profiles for different scenarios.



6.5.1. GENERAL TAB

The **General** tab provides options for high level SMART Mobile functions.



6.5.1.1. Incident group UI

Incident Group UI is a way to create observations which are grouped together. When checked, the observation page shows groups. Tapping the **+** icon adds an observation to an existing group. Tapping on **Create a new group** will add a new group to the list.

In order to remove a group (and all observations in it), swipe left on the group row and tap **YES** to delete it.

The image consists of two side-by-side screenshots of a mobile application interface. Both screenshots have a dark blue header bar with a circular icon on the left and a battery icon on the right. The word "Patrol" is centered in white text.

Left Screenshot:

- Group 1:**
 - Logs (Icon: logs)
 - Planks (Icon: planks)
- Group 2:**
 - Wildlife - direct observation (Icon: animals)
 - Carcass (Icon: deer)
 - Trophies seized (Icon: person with trophy)
- Buttons:** "Create a new group" (grey text) at the bottom.
- Bottom Bar:** Icons for History (clock), Map (map), Patrol (radio tower), Incident (checkmark), and Save (down arrow).

Right Screenshot:

- Group 1:**
 - Logs (Icon: logs)
 - Planks (Icon: planks)
- Delete group?** (Grey background)
 - YES (white text)
 - NO (white text)
- Items:**
 - Wildlife - direct observation (Icon: animals)
 - Carcass (Icon: deer)
 - Trophies seized (Icon: person with trophy)
- Buttons:** "Create a new group" (grey text) at the bottom.
- Bottom Bar:** Icons for History (clock), Map (map), Patrol (radio tower), Incident (checkmark), and Save (down arrow). The "Save" button is highlighted with a green background.

6.5.1.2. Kiosk mode

This option is described in section 4.

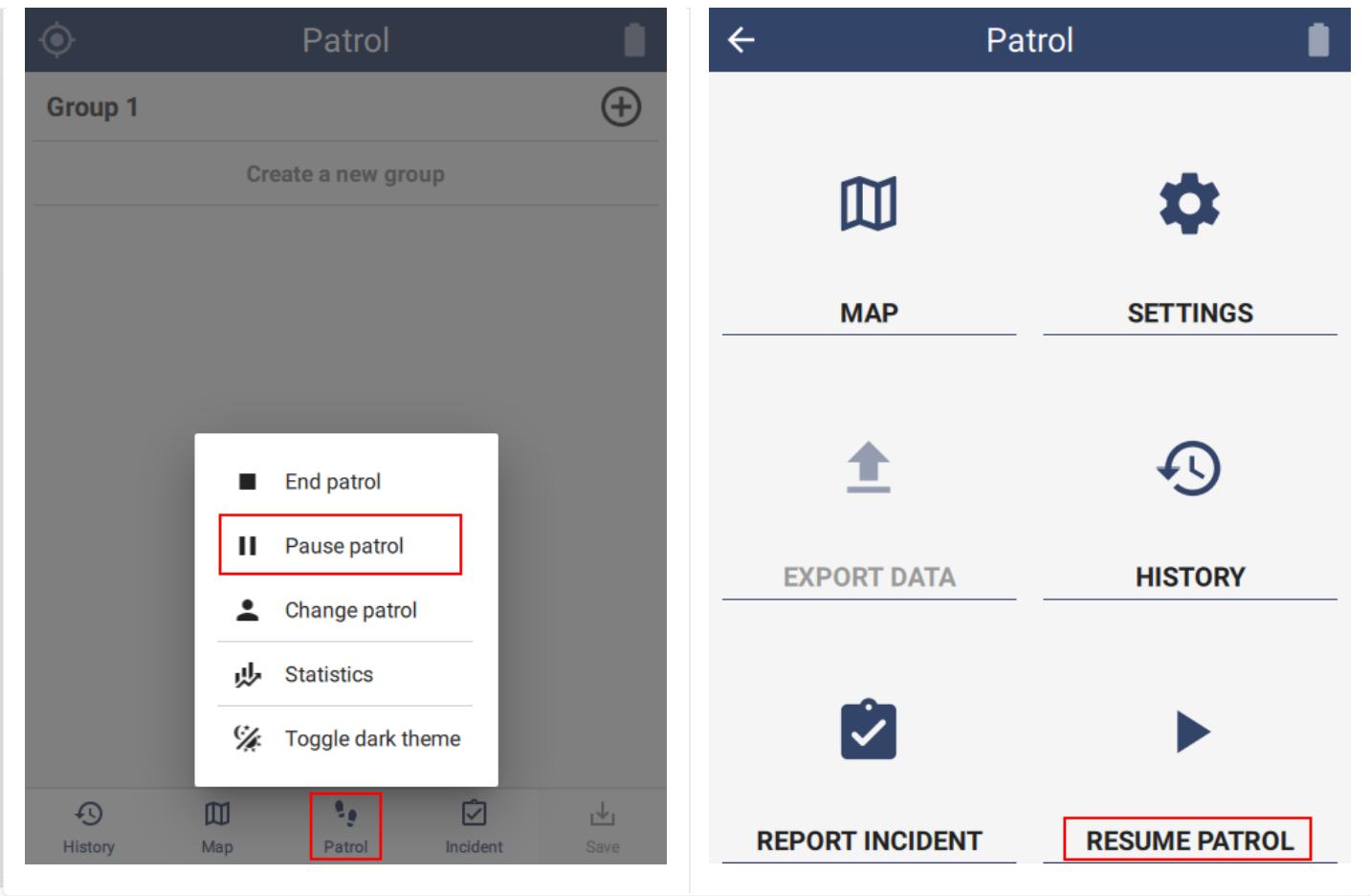
6.5.1.3. Kiosk mode exit pin

This option is described in section 4.

6.5.1.4. Can pause

Both Patrols and Surveys can be paused. This option appears on the Patrol popup menu if the **Can Pause** option is checked. Note that the icon in the bottom right of the home screen changes to **Resume Patrol**.

Data cannot be exported while on patrol. The patrol must first be resumed and then stopped.



6.5.1.5. Disable editing

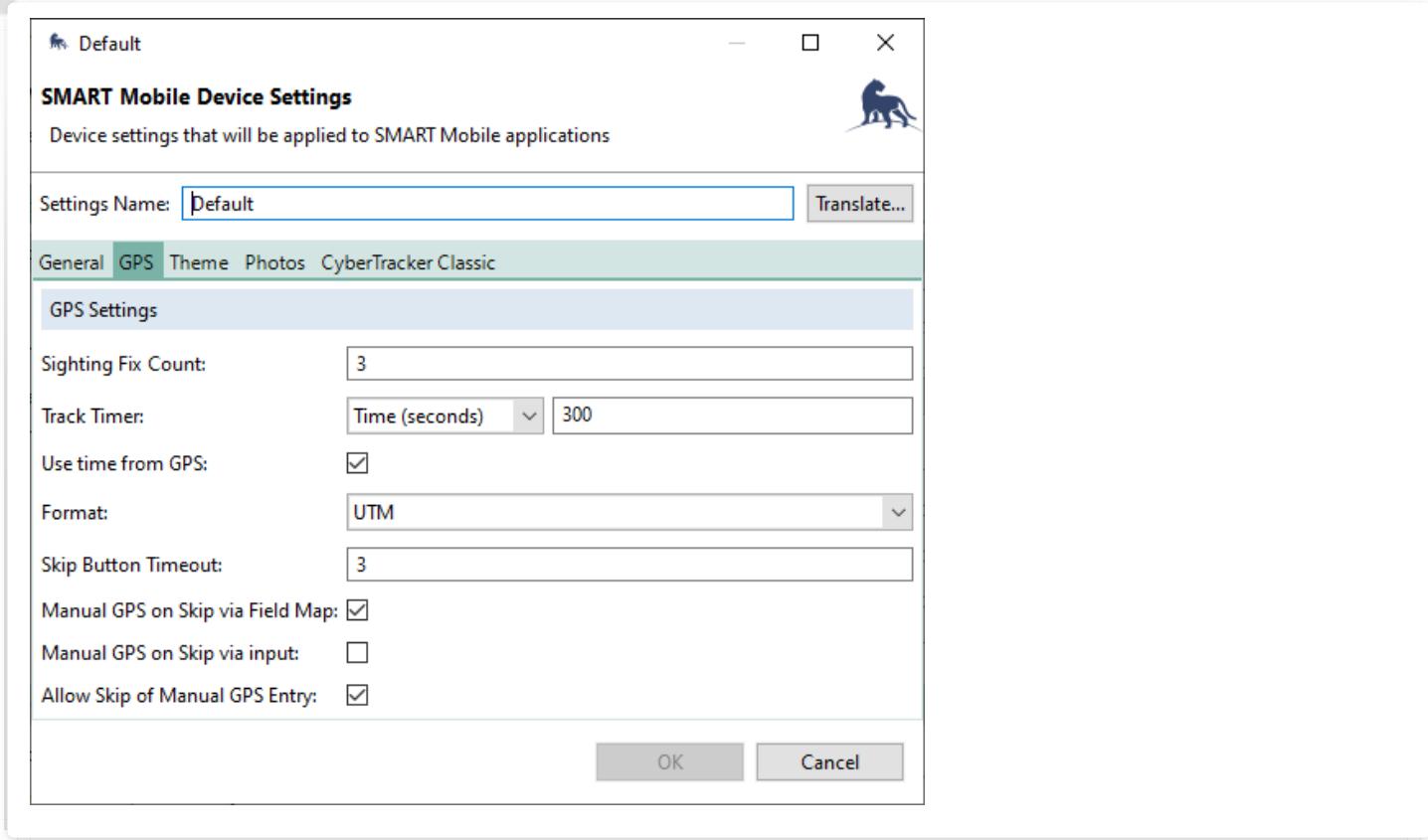
Before data has been exported, it can be edited. However, editing can be disallowed by checking this option.

Editing is done by navigating to the history page and selecting the observation to be edited. Then tap the pencil in the top right corner of the screen. From there the observation can be edited as usual.

When editing is complete, tap the highlighted check mark at the bottom of the screen. The X button cancels the edit operation.

6.5.2. GPS TAB

The GPS tab contains settings related to GPS behavior.



6.5.2.1. Sighting fix count

Sighting fix count is the number of GPS readings to discard after powering it on. On many devices, the first readings of the GPS are stale or sometimes wildly inaccurate. Waiting for a few readings to come through first generally improves location quality.

6.5.2.2. Track Timer

The **Track Timer** interval is specified here. This will be overridden by the **Custom Track Timer Settings** if they are provided. Note that the interval can be in time or distance. A distance interval will have a higher battery cost, since the GPS must remain on to determine when the distance threshold has been crossed.

6.5.2.3. Use time from GPS

For devices that are never connected to a network, the time is likely to be incorrect. If **Use time from GPS** is specified, then SMART Mobile will attempt to use the GPS time rather than the device time.

The message **Waiting for time correction** is displayed while waiting for the first GPS reading to be found.

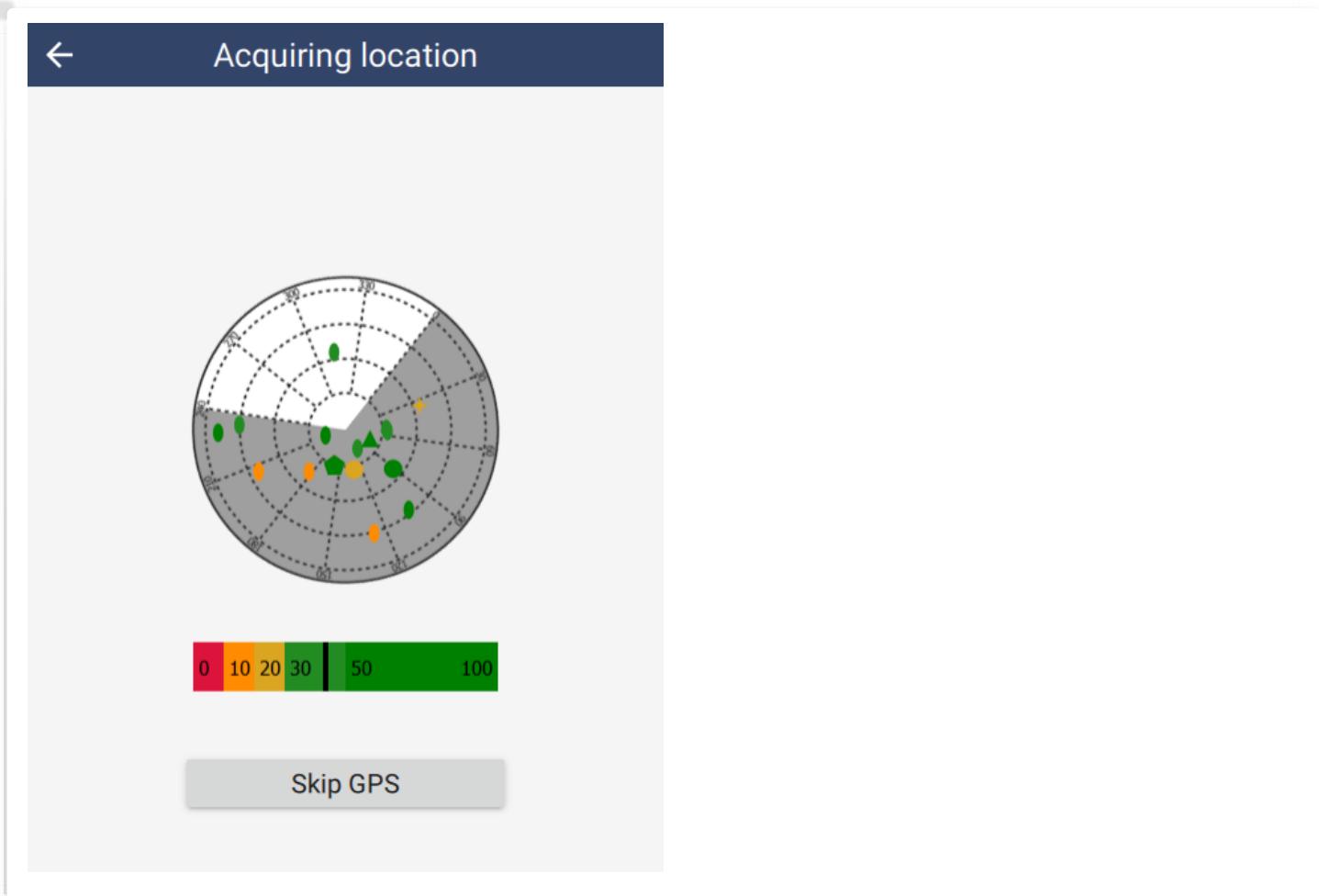
6.5.2.4. Format

GPS location can be displayed in Degrees Minutes Seconds, Decimal Degrees or UTM. **Format** also affects the format of manual location entry.

6.5.2.5. Skip button timeout

Taking a reading from the GPS can be skipped. This is usually done when the satellite signal strength is so weak that waiting for a fix would take too long. It can also be used when a location is being reported from another person or device. The **Skip button timeout** controls how many seconds to wait until the **Skip GPS** button is visible. The delay is intended to prevent accidental tapping as well as to encourage users to wait until the GPS has a fix.

To disable the Skip button altogether, set the timeout to 0.



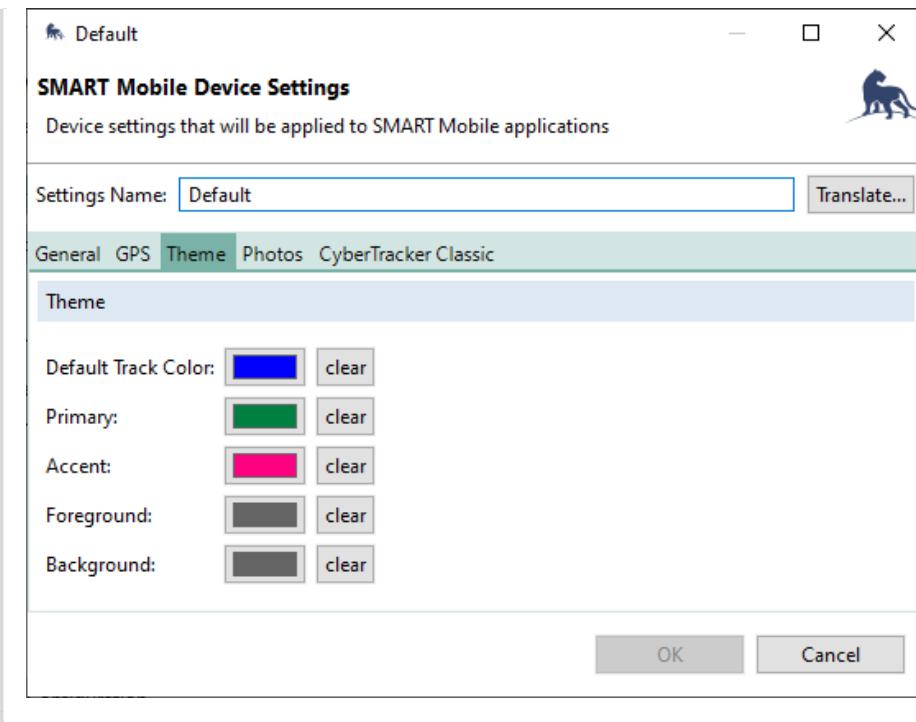
6.5.2.6. Manual GPS entry

If both **Manual GPS on Skip via field map** AND **Allow skip of manual GPS entry** are unchecked, then Skip GPS immediately completes the observation. If no GPS fix is available, then (0, 0) is used. However, if even a partial reading is available, then that will be used.

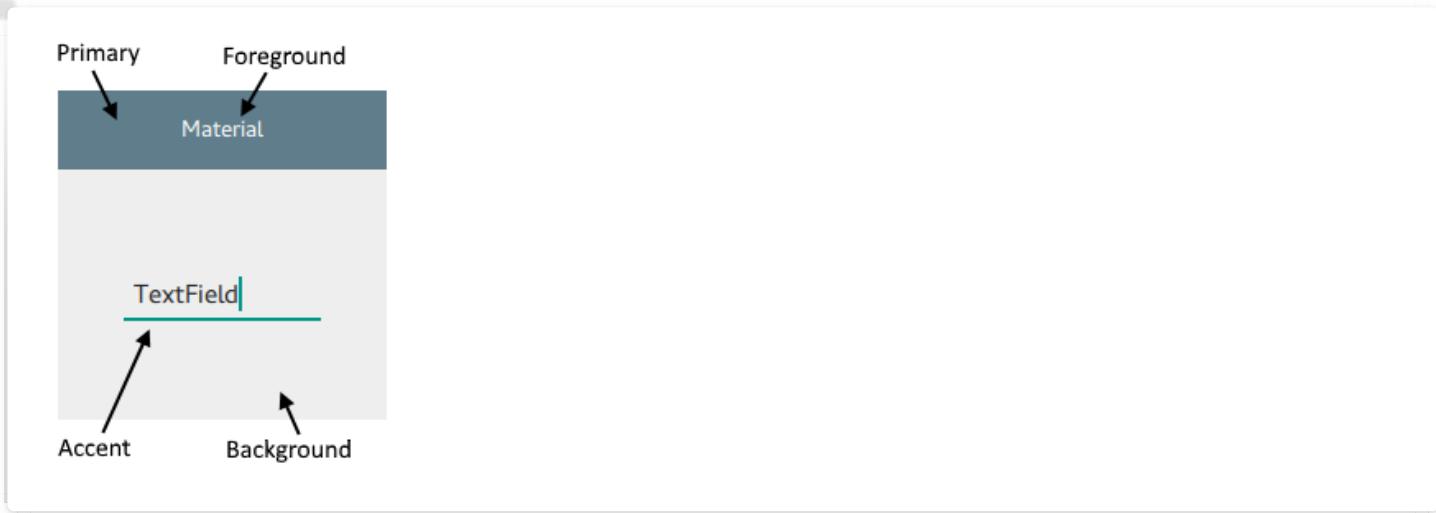
If either **Manual GPS on Skip via field map** OR **Allow skip of manual GPS entry** are checked, then Skip GPS will show the Manual GPS location screen.

6.5.3. THEME COLORS

SMART Mobile uses Material design styling and colors: https://en.wikipedia.org/wiki/Material_Design



The colors are defined as:



Note that currently **Foreground** and **Background** are ignored, so that the Dark mode feature functions correctly.

6.5.4. PHOTOS

See **Additional Photo Settings** in the Configurable Model chapter.

7. General usage

This section covers the basic workings of SMART Mobile outside of the packages which are installed. This includes how to Connect to a package, manage it and configure settings.

7.1. Connect tab

After a package has been created in SMART Desktop, it must be installed by SMART Mobile. There are three ways to get a package to a device: USB cable, the internet or NFC (like Bluetooth).

7.1.1. USB CABLE

SMART Mobile should already be installed (see section 3) on the device. Check out the section on installing SMART Mobile first.

Connect the device to the PC using a USB cable. Make sure the device is configured to Transfer files and shows up in Windows Explorer as a device. If this does not happen, consult the troubleshooting section.



USB Preferences



USB

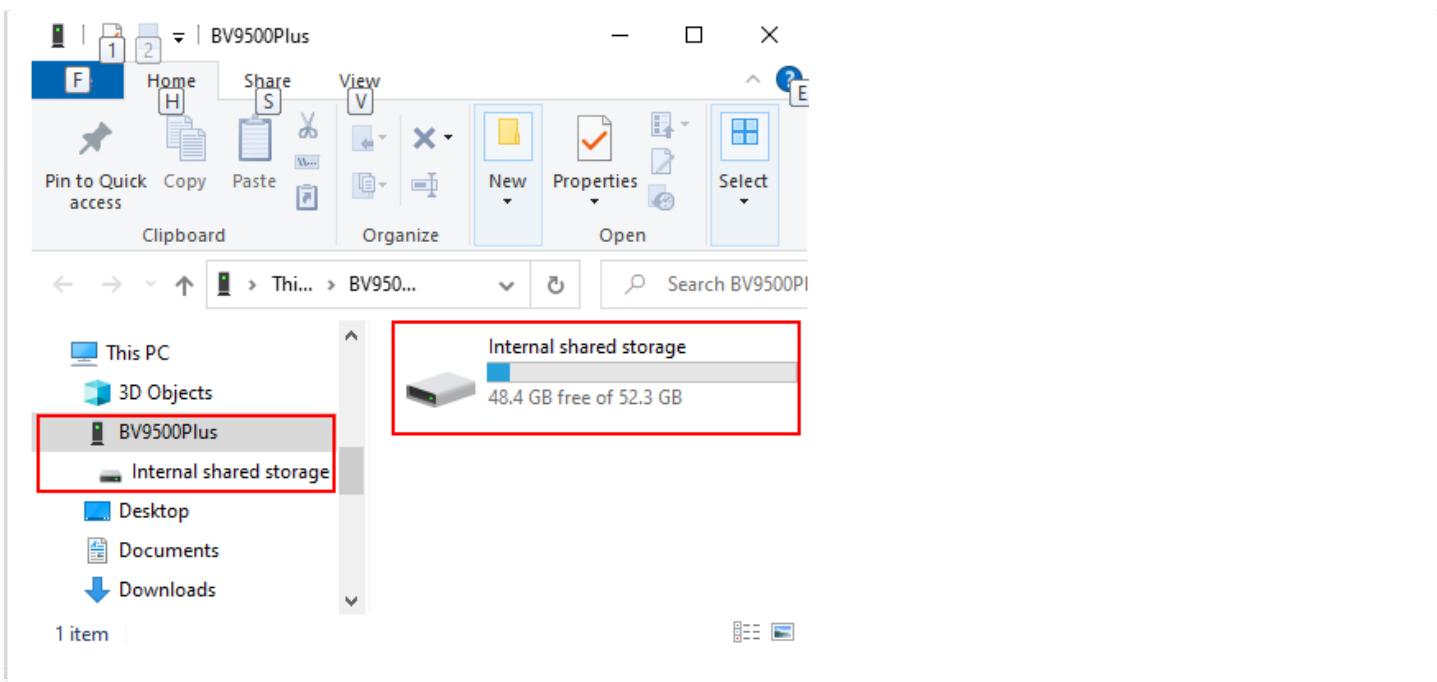
USB controlled by

- Connected device
- This device

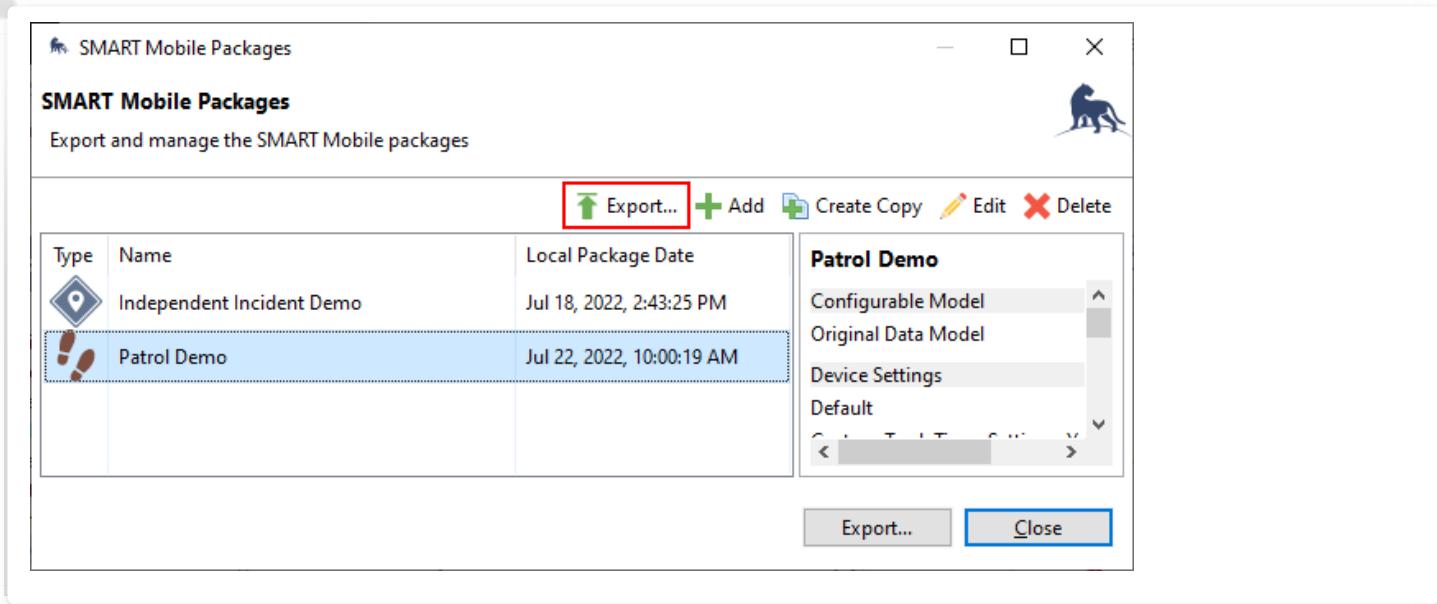
Use USB for

- File Transfer
- USB tethering
- MIDI
- PTP
- No data transfer

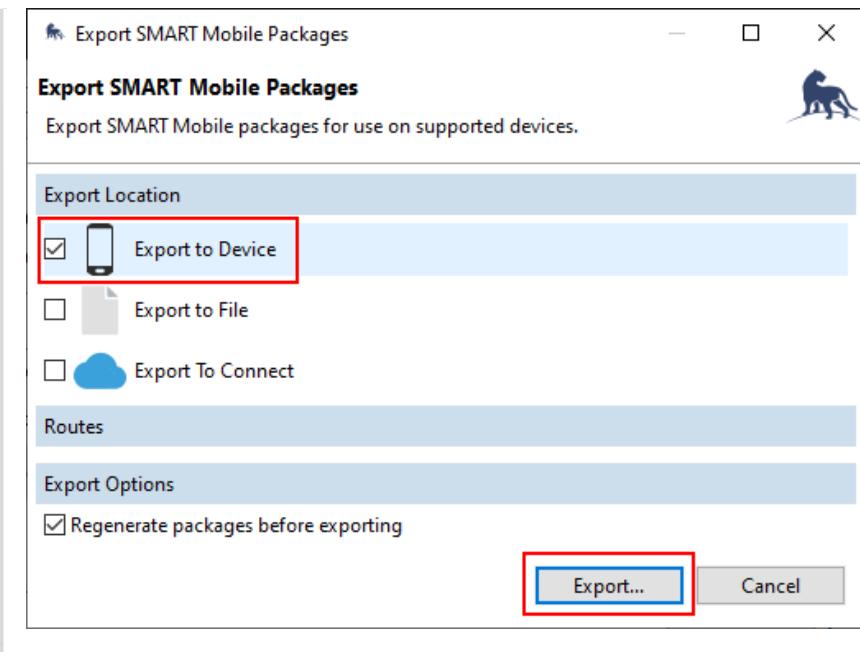




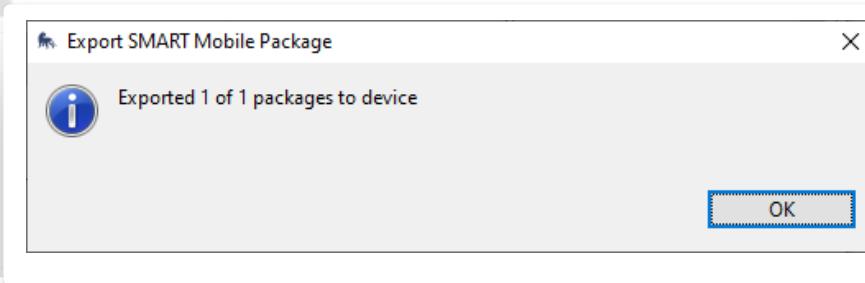
Now open the **SMART Mobile Packages** dialog from the **Field Data** menu and click the **Export** button:



The **Export SMART Mobile Packages** dialog will display. Check **Export to Device** and then click the **Export** button:



When the process succeeds, the following message will display:



Now launch SMART Mobile on the device and go to the **Connect** tab and tap **SMART Desktop - Scan for desktop projects**:

Connect



SMART Desktop

Scan for desktop projects



SMART Connect

Connect to an online project



SMART Collect

Connect to a community project



Scan QR code

Install from a shared QR code



Connect



Projects

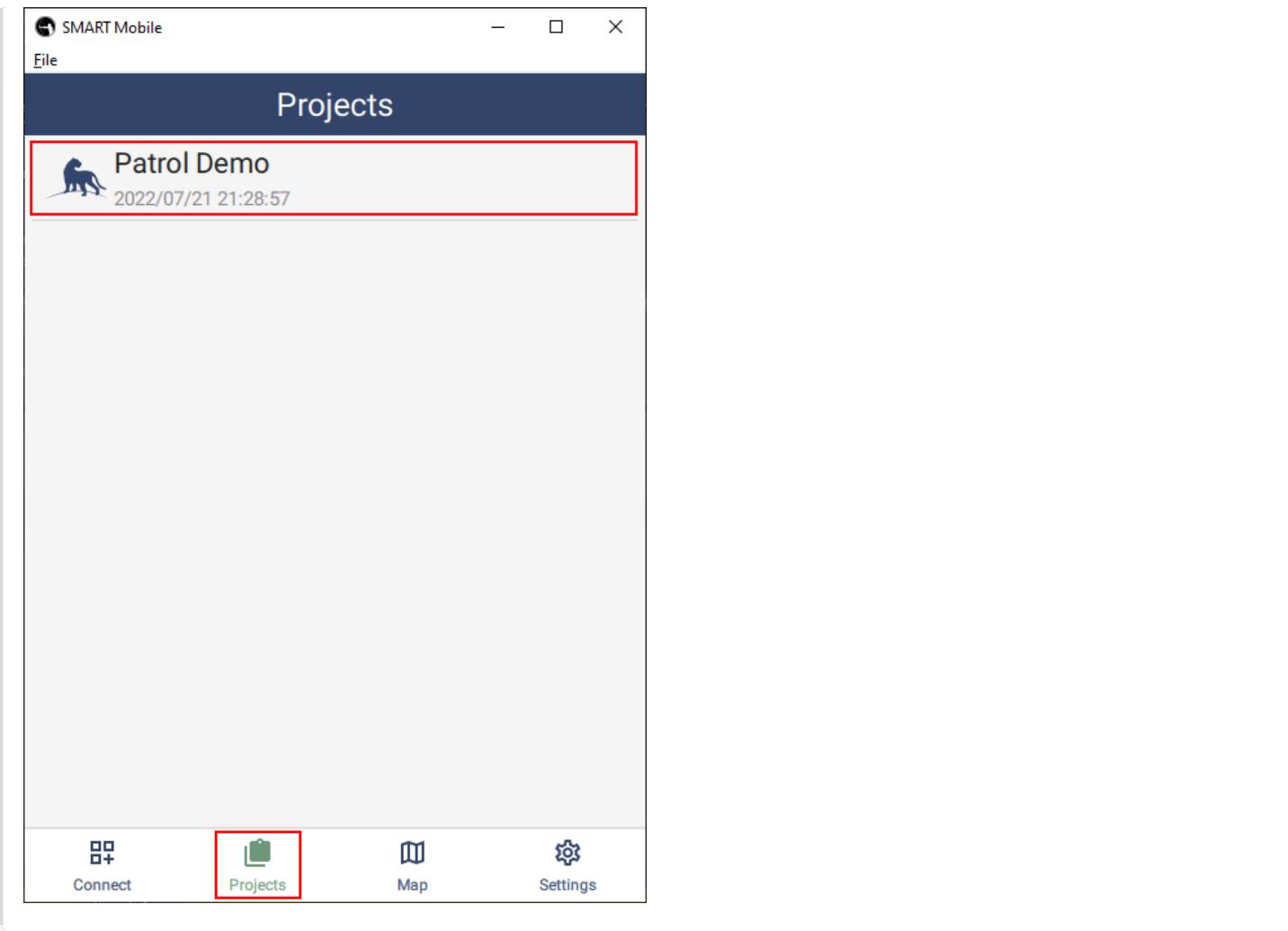


Map



Settings

After a few seconds, the package will be found and installed as a project. SMART Mobile will automatically navigate to the **Projects** tab:

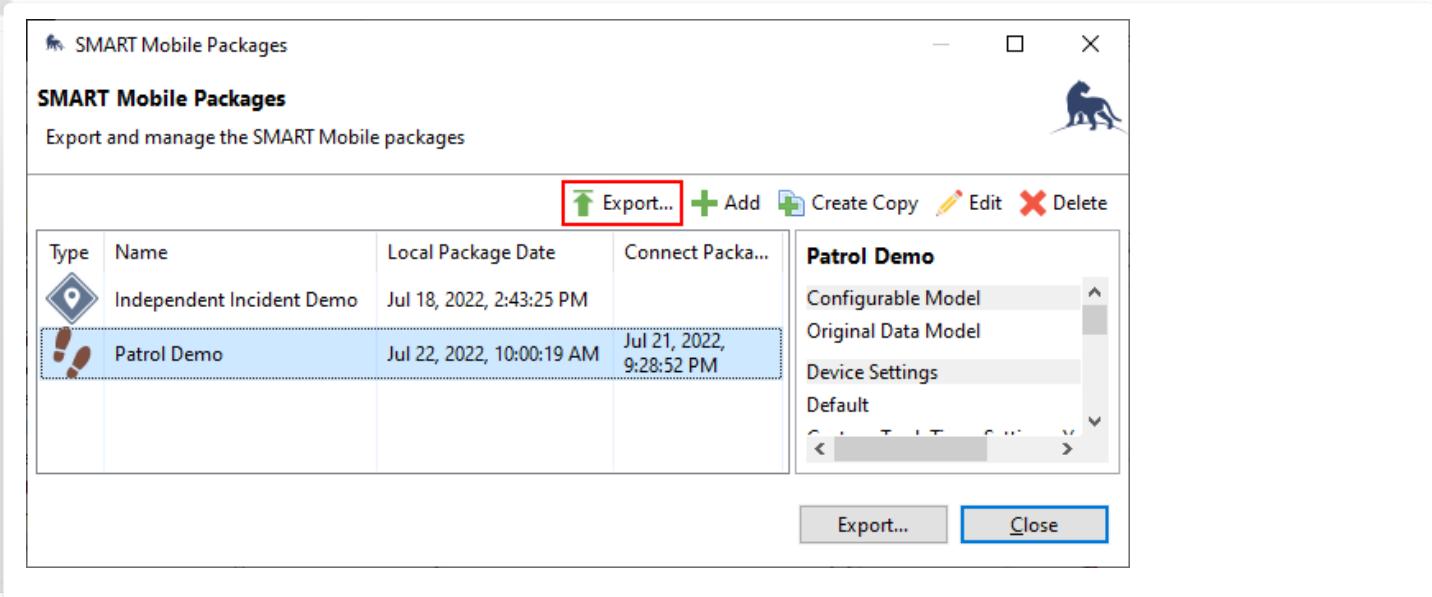


7.1.2. CONNECT

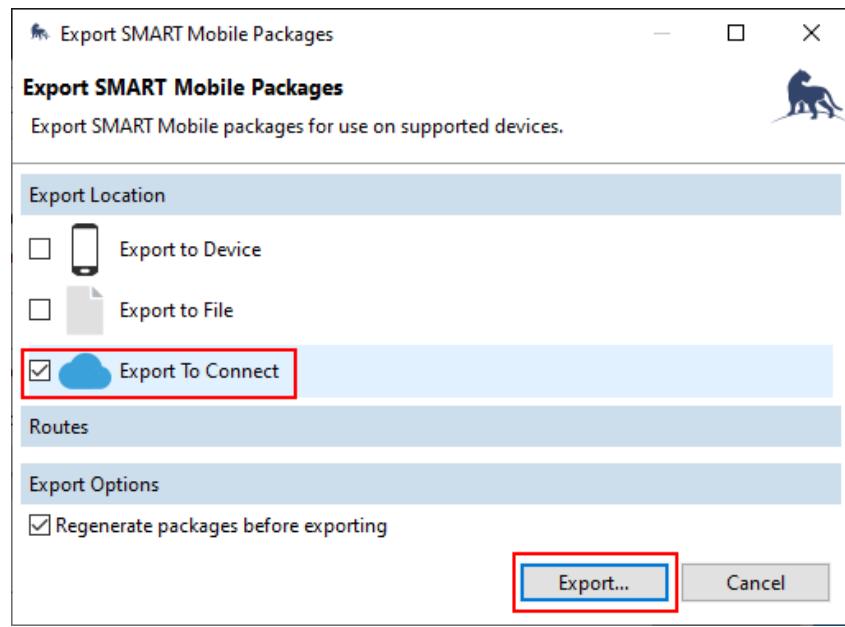
SMART Mobile should already be [installed](#) on the device. Check out the section on installing SMART Mobile first.

7.1.2.1. Uploading a package

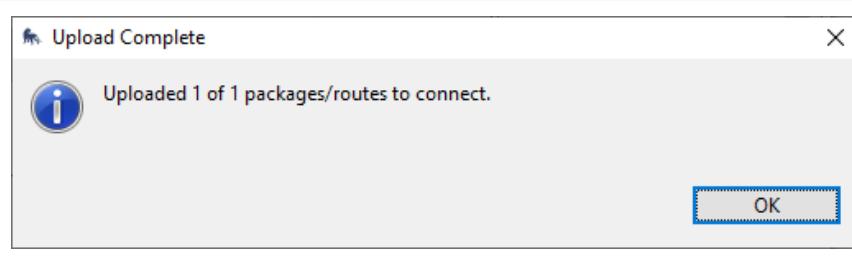
Open the **SMART Mobile Packages** dialog from the **Field Data** menu and click the **Export** button:



The **Export SMART Mobile Packages** dialog will display. Check **Export to Connect** and then click the **Export** button:



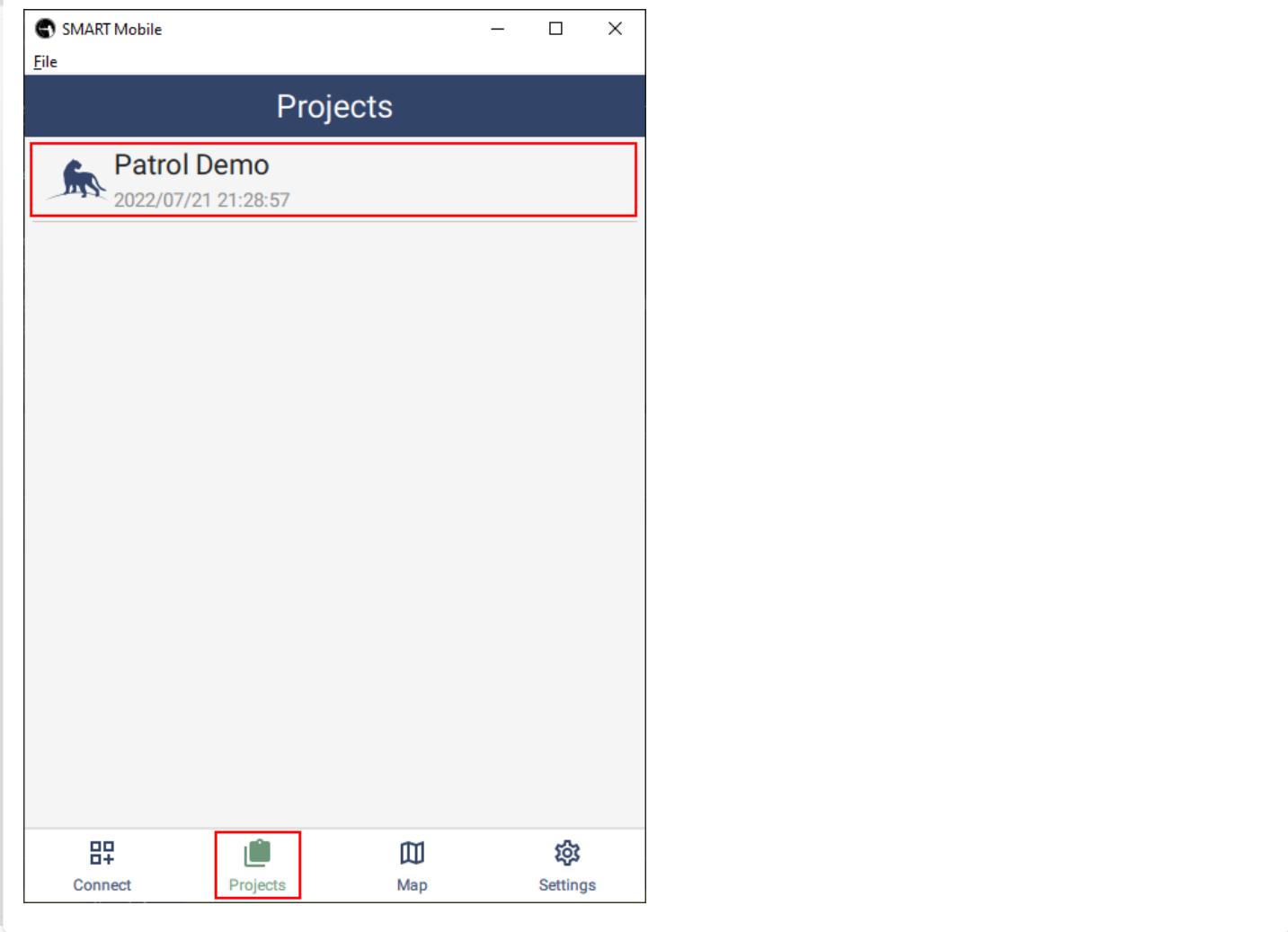
When the process succeeds, the following message will display:



7.1.2.2. Installing from a server

Now launch SMART Mobile on the device and go to the **Connect** tab and tap **SMART Connect - Connect to an online project**. Select the server, username and password and tap **Login**. Then select the package to install.

After downloading the package, Patrol Demo will be installed. The **Projects** tab will automatically be selected:



7.1.2.3. Installing from a Package URL

Once a package has been uploaded to Connect, it can be installed on a device either a **Package URL**. This URL is sent to a device using WhatsApp, SMS, Email or another system. The user taps on the link and SMART Mobile will be launched and install the package.

Click the button to the right of the Package URL to copy the link to the clipboard. Then paste it into an email and send it to users. Tapping on the link on a phone with SMART Mobile installed will trigger the install.

SMART Mobile Packages

SMART Mobile Packages

Configure the SMART Mobile package contents

Model Settings Patrol Metadata Basemap Settings **Connect** Alerts

Data Uploads

If using this option all data will be sent to Connect, then imported into SMART Desktop through the data queue features. Users cannot plug the mobile device into the SMART Desktop to download data. An internet connection is required, and all data will remain on the device until an internet connection is acquired.

Upload Data To Connect

Automatically upload data every minutes

Position Updates

Position updates will appear on the SMART Connect web application Alerts Map. Position updates require the mobile device has an internet connection and remain on the device until an internet connection is acquired.

Send position updates every minutes as type

[refresh alert types](#)

Package URL

Send this link to users to access the package. Package must be uploaded to Connect before users can access it.

<https://cybertrackerwiki.org/applink-smart?eyJzZXJ2ZXIiOiJodHRwczpcL1wvY29ubmVjdCucmVmcmFjdGlvbnMubmV0Ojg0NDNcL3NlcnZlclwvbm9hXC9jeWJlcnRyYWNRZXJcL3BhY2thZ2VzXC8xMzk2ODI0MjQ2MjE0OTAzOWZkZThkN2I4MmMxNWM1NilslmNvbm5IY3Rv> 

By default users will be prompted for a Connect username/password before they can access the package. You can make the package public (no username/password required) but this means anyone can access the package. This includes all data inside the package (employees, data model etc) and the necessary information to upload data to Connect. Use with care.

Public Package

If SMART Mobile is not installed on the device when the user taps the link, the browser will navigate to the following web page. The button for App Store will appear on iOS devices and the button for Google Play will only appear on Android devices. Tapping the button will open the store to the link for download.



Install SMART Mobile

To use SMART Mobile, first install the mobile application by clicking the link below or following the instructions.

Download SMART Mobile



Download on the
App Store



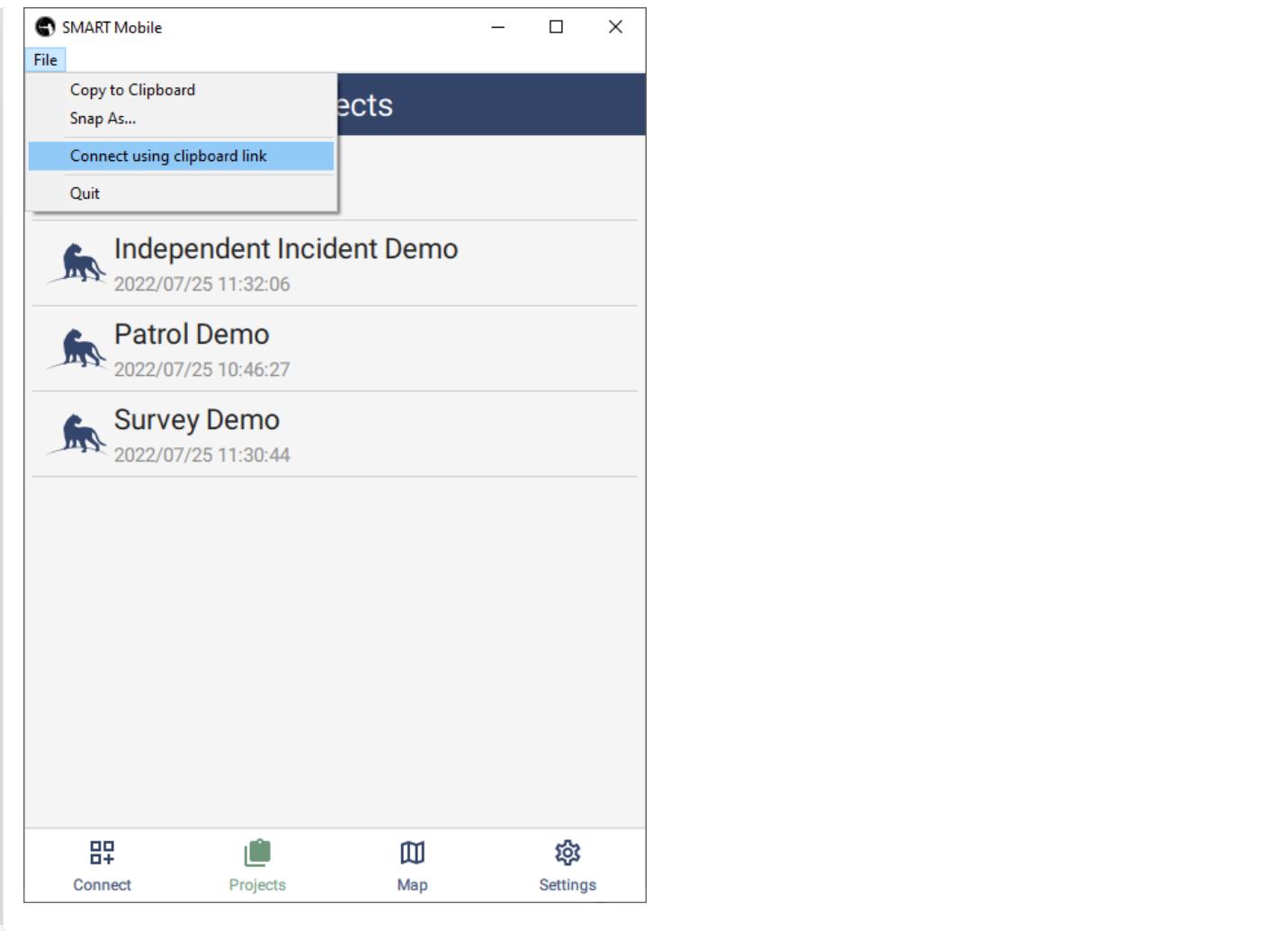
GET IT ON
Google Play

Steps:

1. Install SMART Mobile using the button above
2. Click the link which opened this page
3. Launch project

More on the [CyberTracker Wiki for SMART](#).

The **Package URL** can be used directly on the SMART Mobile Desktop Simulator. First copy the Package URL to the clipboard, then click the **Connect using clipboard link** menu option.



7.1.2.4. Installing with a QR code

SMART Mobile can generate a **QR code** for an online (Connect or Collect) package. When the code is scanned, SMART Mobile will launch and then download and install the package. To generate a QR code for a package, long press on the project until a project options page shows up.

The image consists of three side-by-side screenshots of the SMART Mobile application interface:

- Left Screenshot (Projects Screen):** Shows the 'Projects' screen with a list of projects. The 'Patrol Demo' project is selected and highlighted with a red border. Below the list, the text 'Press and hold' is displayed in red.
- Middle Screenshot (Project Details Screen):** Shows the 'Project details' screen for the 'Patrol Demo' project. It includes a project icon, the project name, and several options: 'Exported data' (with a note 'Project data waiting for import'), 'QR code' (highlighted with a red border), 'Send package', 'Update', 'Reset project', and 'Delete project'.
- Right Screenshot (QR Code View):** Shows a large, blurry QR code. At the bottom, there are two buttons: 'Share link' and 'Share QR code' (highlighted with a red border).

The QR code can be scanned by other devices directly from this screen. Alternatively, it can be shared over email for others to use. For example, it could be added to a document or poster for others to connect to directly.

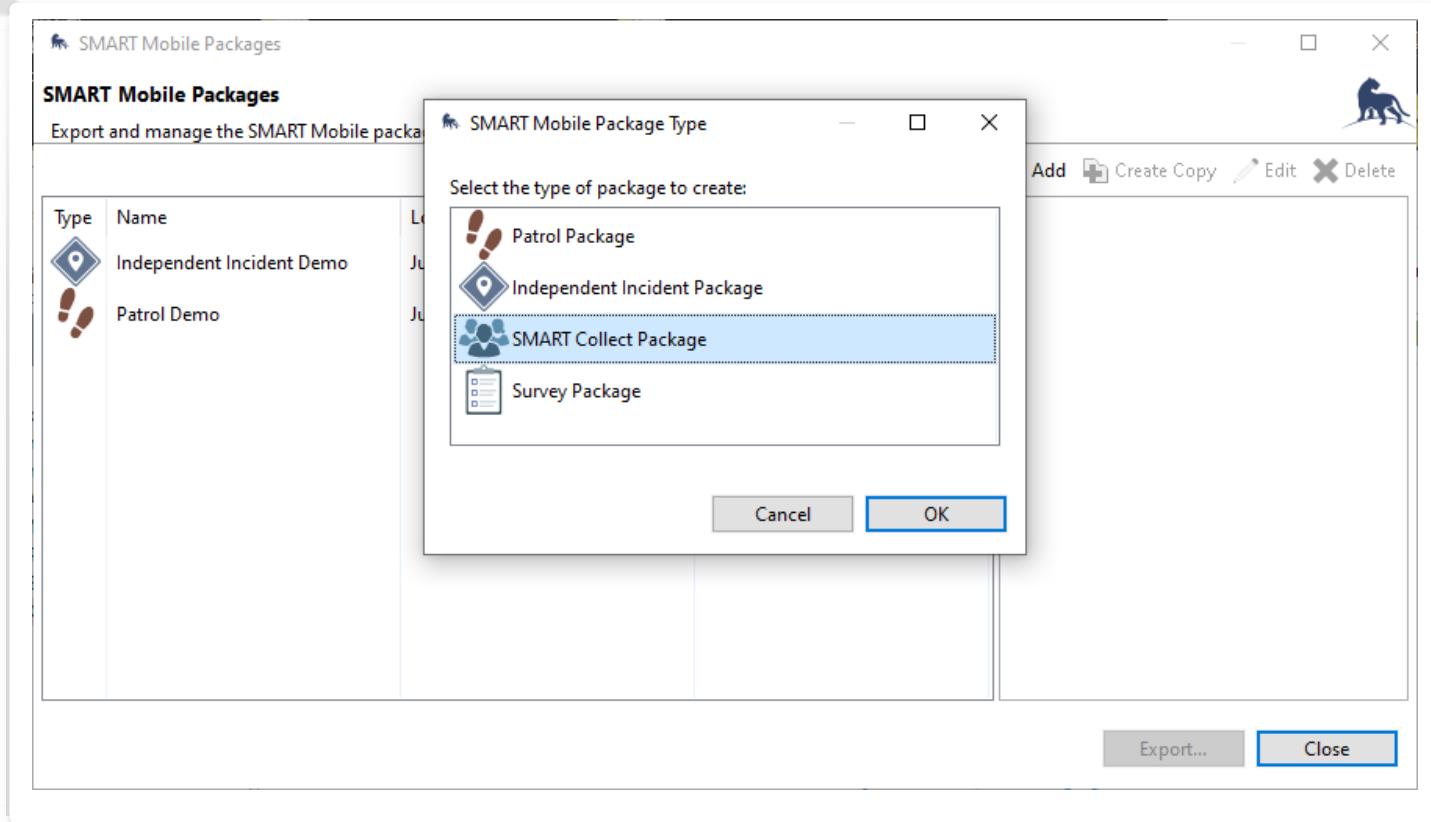
For Connect packages, scanning the QR code will cause SMART Mobile to prompt with a username and password page. Enter credentials to download and install the package.

For public packages without security, the package will be downloaded and installed directly.

7.1.3. COLLECT

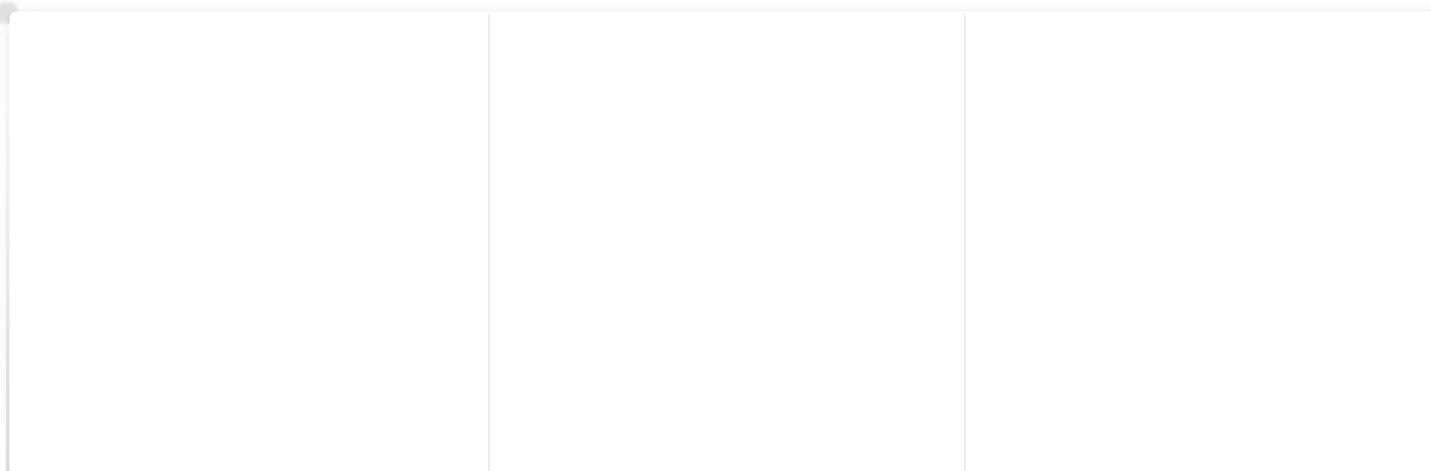
A **Collect package** is a package type suitable for distribution to the general public. The user interface is simplified and data must be uploaded to a Connect server.

Collect packages are created on the **SMART Mobile Packages** dialog:



They are published to the server in the same way as any other package.

Collect packages can be discovered by publishing them to a central register. For example:



Connect

- SMART Desktop**
Scan for desktop projects
- SMART Connect**
Connect to an online project
- SMART Collect**
Connect to a community project
- Scan QR code**
Install from a shared QR code

Select region

- All regions
- Afghanistan
- Åland Islands
- Albania
- Algeria
- American Samoa
- Andorra
- Angola
- Anguilla
- Antarctica
- Antigua and Barbuda
- Argentina

Select server

- Brazil Kaninde - WWF
smartcollect
- Ecuador
smartcollect
- Myanmar - WWF
wwfmyanmarconnect.smartconservationtools.org
- Namibia - nczoo
namibiaconnect.smartconservationtools.org
- SMART Connect Test**
connecttest.smartconservationtools.org
- Thailand - Kaeng Krachan National Park
smartcollect
- WWF Paraguay
rionegroconnect.smartconservationtools.org

7.1.4. SCAN QR CODE

Scan QR code opens a camera window which scans for a QR code. The QR code contains a **Package URL** (see above). If a QR code is found, the associated SMART Mobile package will be downloaded and installed in the same way as if the user clicked a Package URL link.

If the device has its own QR code scanner, SMART Mobile will be automatically launched and the package will be downloaded and installed.

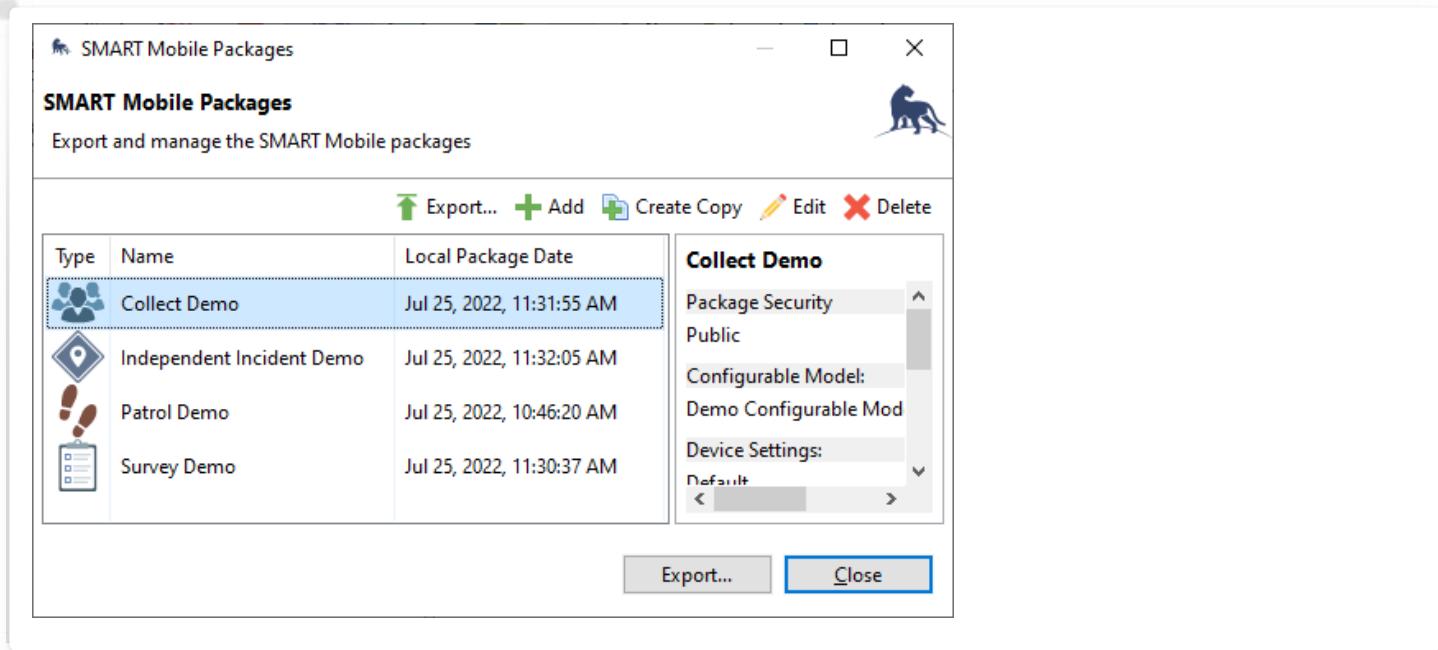
Connect

- SMART Desktop**
Scan for desktop projects
- SMART Connect**
Connect to an online project
- SMART Collect**
Connect to a community project
- Scan QR code**
Install from a shared QR code

Connect **Projects** **Map** **Settings**

7.2. Projects tab

SMART packages are listed on the **SMART Mobile Packages** dialog:



They are installed on SMART Mobile using one of the package installation mechanisms (see section 7.1). Long press (or press and hold) on a Project shows the **Project details** page.

The screenshot shows the SMART mobile interface. On the left is the 'Projects' screen, which lists several projects: 'Collect Demo' (2022/07/25 11:31:57), 'Independent Incident Demo' (2022/07/25 11:32:06), 'Patrol Demo' (2022/07/25 10:46:27), and 'Survey Demo' (2022/07/25 11:30:44). The 'Patrol Demo' item is highlighted with a red border and the text 'Long press' overlaid. On the right is the 'Project details' screen for 'Patrol Demo'. It features a back arrow, a logo, and the project name 'Patrol Demo'. Below the name are several options: 'Exported data' (with a note 'Project data waiting for import'), 'QR code' (with a note 'Share a link to this project'), 'Send package' (with a note 'Share this project with others'), 'Update' (with a note 'Check for updates'), 'Reset project' (with a note 'Delete all project data'), and 'Delete project' (with a note 'Delete the project and all data'). At the bottom of the interface are navigation icons for Connect, Projects, Map, and Settings.

7.2.1. EXPORTED DATA

Exported data are data files on the device that are awaiting import from SMART Desktop. The data in them cannot be

edited or modified.

Data is typically exported after a patrol or survey by tapping the **Export data** button. If a new Patrol/Survey is started and the previous Patrol/Survey has not been exported, an export will be triggered automatically.

Data can be shared using the device sharing system (e.g. email). This is designed as a recovery mechanism in case the device cannot be connected to a PC.

The image consists of three vertically stacked screenshots from the SMART Mobile application:

- Project details:** Shows a navigation bar with a back arrow and the title "Project details". Below is a section titled "Patrol Demo" with a logo of a bear. A red box highlights the "Exported data" section, which contains a file named "2022-07-25 19:54:06" (1 kb) and a "Share" icon.
- Exported data:** Shows a navigation bar with a back arrow and the title "Exported data". It displays a message: "The files listed below are awaiting import. If the import is not working, click on a file and send it using another channel." Below this is the same file entry as in the first screenshot.
- Log entry:** Shows a navigation bar with a back arrow and the timestamp "2022-07-25 19:54:06". It lists project details:

Project	Patrol Demo
Start date	Mon 2022/07/25
Start time	07:53 pm
Stop date	Mon 2022/07/25
Stop time	07:53 pm
Sightings	1
Locations	0

A "Delete" icon is at the bottom left, and a "Share" icon is highlighted with a red box at the bottom right.

For the **Connect** configuration, data will be sent directly to the server and will never appear in Exported data.

For the **USB cable** configuration, a data file will be created when tapping **Export data** or starting a new Patrol/Survey when the previous one has not been exported.

Exported data is also visible from the Settings page inside the project (see section 8.6.5).

7.2.2. QR CODE

QR Code is a method to share Projects with other users. See section 7.1.4.

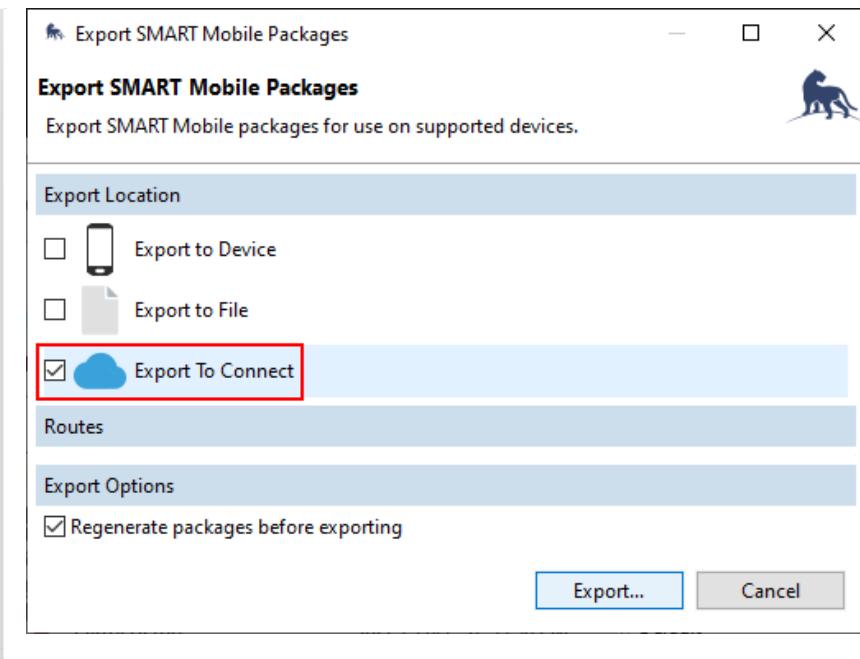
7.2.3. SEND PACKAGE

Send package is a method to send a Project to another user using the device sharing system. See the section on Package Installation.

7.2.4. UPDATE

Packages served from Connect may be updated on the server. Clicking **Update** here will test to see if a newer version of the package is available for download. If so, it will download and install it.

Packages are updated on Connect using the Export to Connect feature on the **Export SMART Mobile Packages** dialog.



When a newer version of a package is detected, SMART Mobile will prompt the user that it is available for download. Tap either the button to the right of the project row to update. When launching, a prompt will appear if an update is available. To confirm, tap and hold **Yes, update now**. It is recommended to update as soon as an update is available, however failing to do so will not cause data loss.

Before updating, all data must be exported. If it is not, then the **Unsent data** message will appear. To fix this, launch the project and tap **Export data**. Export data requires that a patrol is not running.

Projects

 Collect Demo

2022/07/25 11:31:57

 Independent Incident Demo

2022/07/25 11:32:06

 Patrol Demo

2022/07/25 10:46:27



 Survey Demo

2022/07/25 11:30:44

Unsent data



Connect



Projects



Map



Settings

7.2.5. RESET DATA

Reset data is a troubleshooting feature which resets a project to its initial state. All project data is removed and reset.

Project details



Patrol Demo

-  Exported data >
Project data waiting for import
-  QR code >
Share a link to this project
-  Send package >
Share this project with others
-  Update >
Check for updates
-  Reset project >
Delete all project data
-  Delete project >
Delete the project and all data

Project details



Patrol Demo

!

Reset project?

All project data will be permanently removed from the device.

Yes, reset it

Cancel

Delete all project data

 Delete project
Delete the project and all data

7.2.6. DELETE PROJECT

Delete project permanently removes a project from a device. All project data is removed.

Project details



Patrol Demo

-  Exported data >
Project data waiting for import
-  QR code >
Share a link to this project
-  Send package >
Share this project with others
-  Update >
Check for updates
-  Reset project >
Delete all project data
-  Delete project >
Delete the project and all data

Project details



Patrol Demo

!

Delete project?

The project and all of its data will be permanently removed.

Yes, delete it

Cancel

Delete all project data

 Delete project
Delete the project and all data

Swiping left on a Project row will also offer to delete the project. Tap YES to reach the confirmation dialog:

Projects

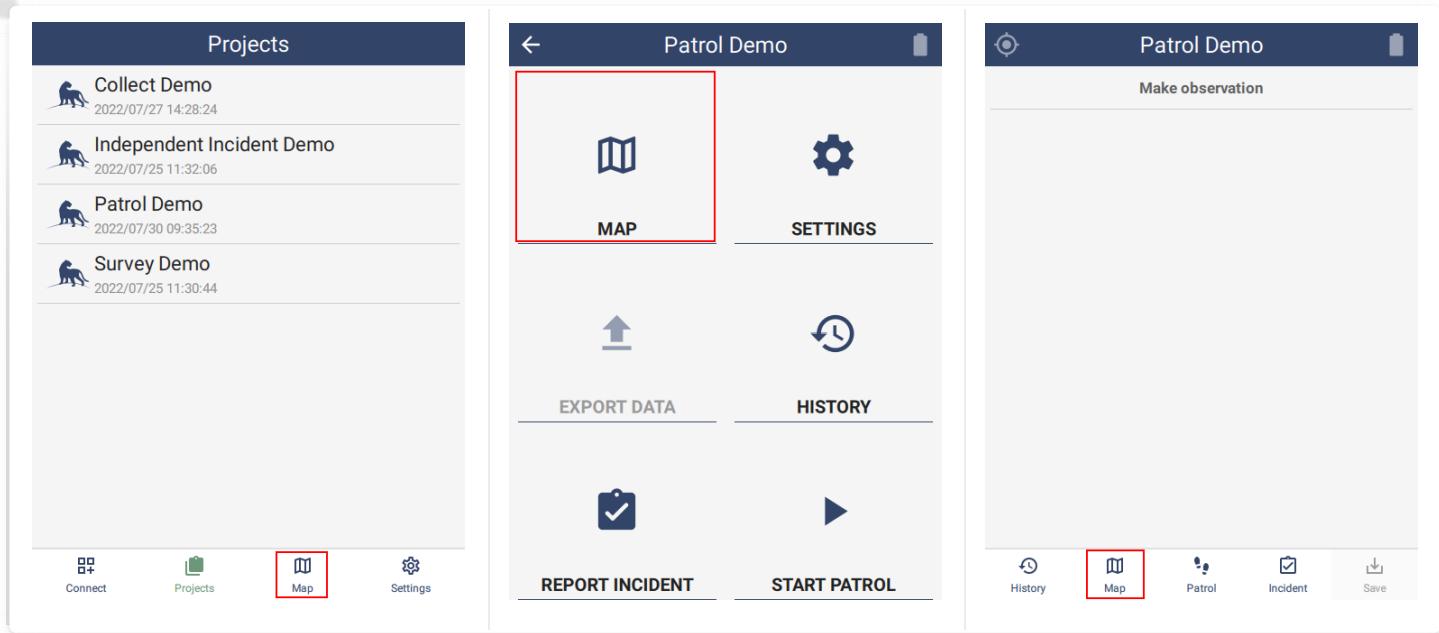
-  Collect Demo
2022/07/25 11:31:57
-  Independent Incident Demo
2022/07/25 11:32:06
-  Survey Demo
2022/07/25 11:30:44

Projects

-  Collect Demo
2022/07/25 11:31:57
-  Independent Incident Demo
2022/07/25 11:32:06
-  Survey Demo
2022/07/25 11:30:44

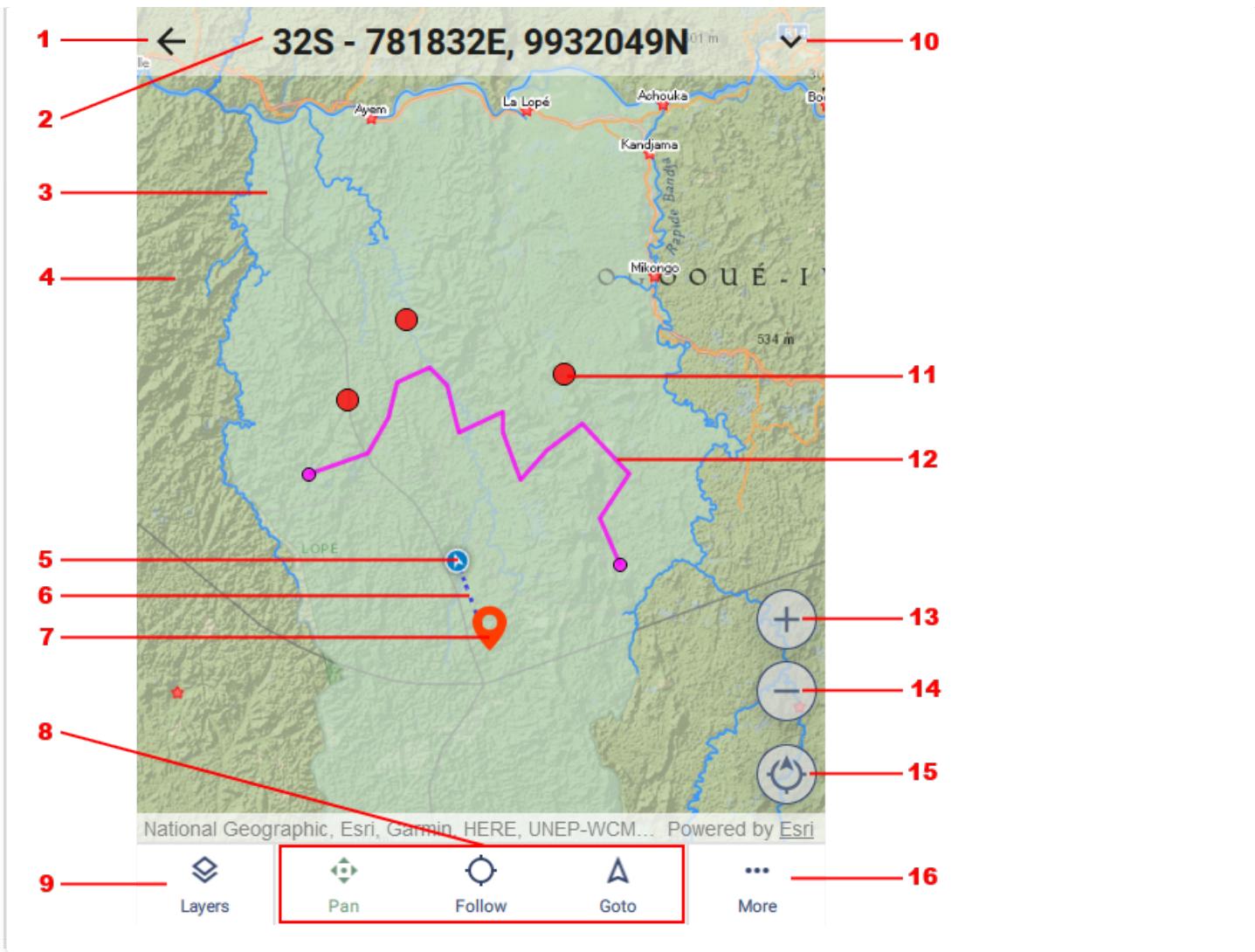
7.3. Map page

The **Map page** is available from several locations within SMART Mobile. There is a button on the **home page**, the **project page** and the Patrol/Survey **observation page**. The same page is displayed in each case, but when triggered from the Projects page (left-most), offline maps and observations from an individual project will not be available.



7.3.1. FEATURES

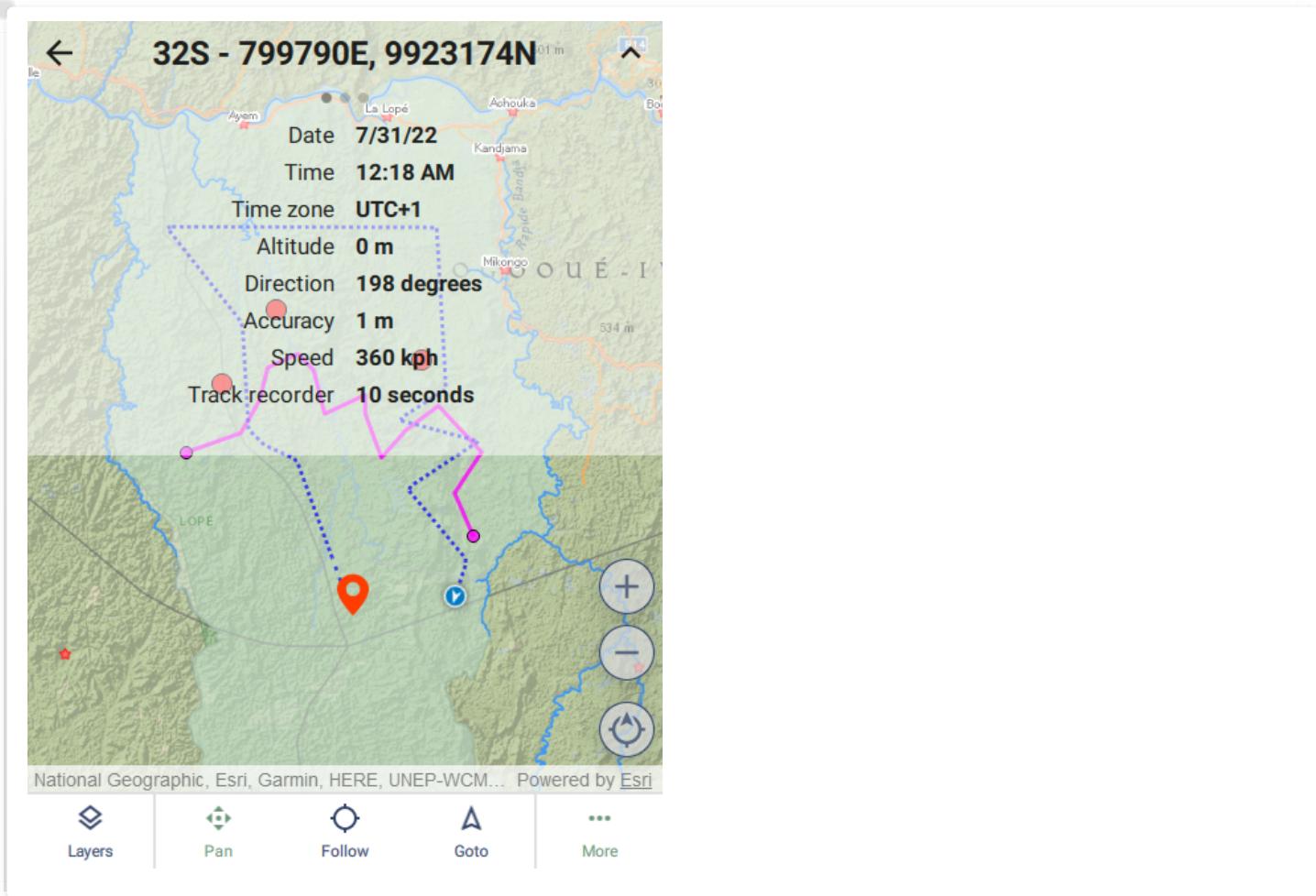
The Map page has the following features:



- 1 Back to previous page
- 2 Current location
- 3 Offline map overlaid onto online map
- 4 Online map (requires internet connection)
- 5 Current location marker
- 6 Track timer
- 7 Observation - tap to select and see metadata
- 8 Navigation mode: **Pan** requires the user to move the map, **Follow** and **Goto** move the map automatically as the location moves. **Goto** is designed for navigation.
- 9 Open the Layers page
- 10 Show or hide the additional information overlay. See More (16).
- 11 Route point - tap to set Goto.
- 12 Route line - tap ends to set Goto.
- 13 Zoom in by 10%
- 14 Zoom out by 10%
- 15 Orientation - tap to reset to north at the top.
- 16 Show or hide the additional information overlay. See (10).

7.3.2. DATA OVERLAY

The **Data overlay** shows more detailed information about the state of the GPS. This includes the time, location, speed, heading and the state of the track recorder. This is purely informational.



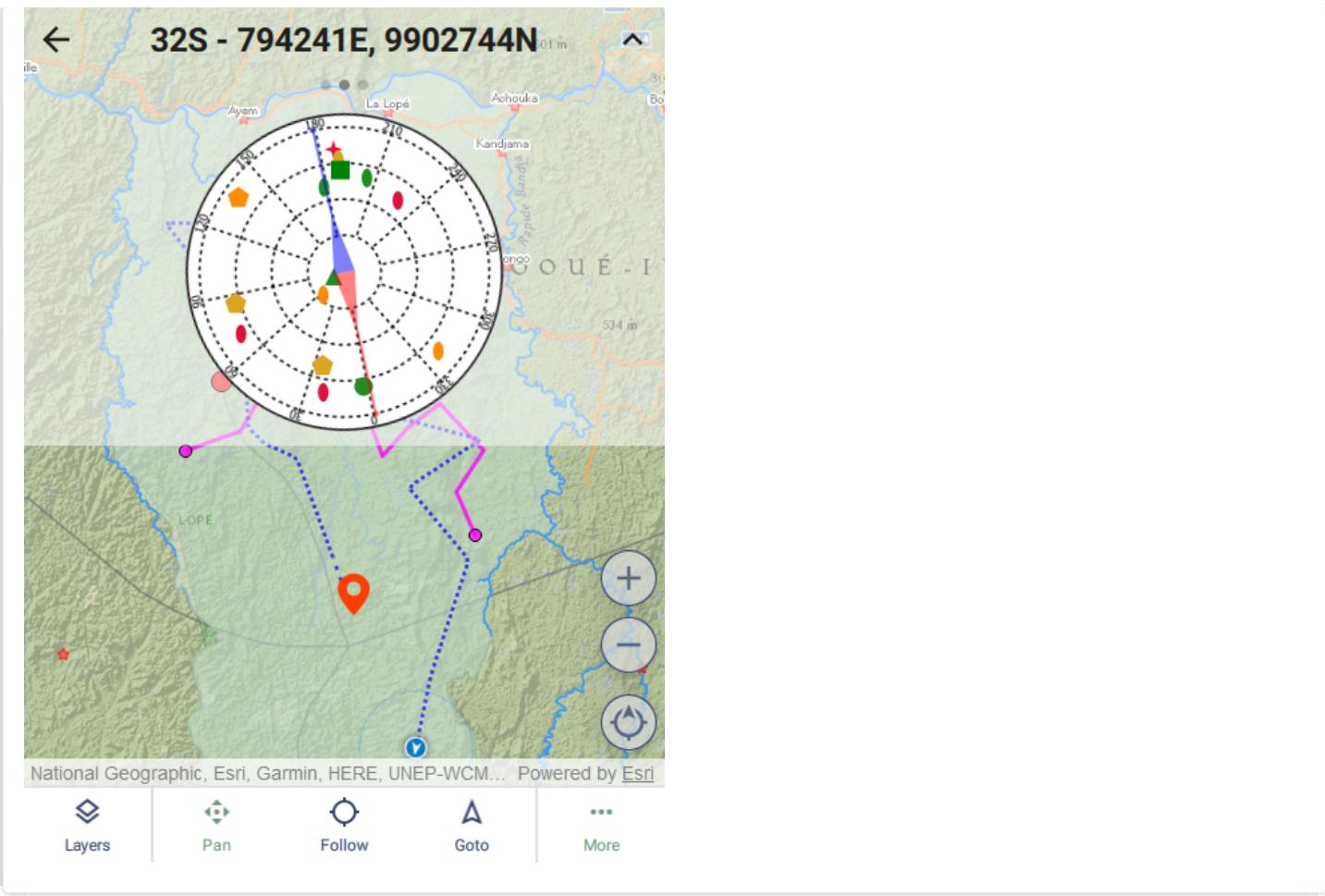
7.3.3. COMPASS OVERLAY

The Compass overlay shows the compass and the location of the satellites that are being tracked by the GPS.

The compass needle is offset according to the magnetic declination.

The shapes on the dial represent satellites. The color represents the signal strength - green is strongest and red is weakest. Satellite views are not available on iOS.

The different types are: circle (Navstar), triangle (Glonass), pentagon (Galileo), star (Beidou), square (Qzss), diamond (Sbas), ellipse (other):



7.3.4. GOTO OVERLAY

The Goto overlay provides a simple directional navigation system. First tap the point – this will bring up the **Identify** page. Then tap **Set goto**. A red line appears connecting the current location with the destination. The overlay displaces the distance and direction from the current point.

National Geographic, Esri, Garmin, HERE, UNEP-WCM... Powered by Esri

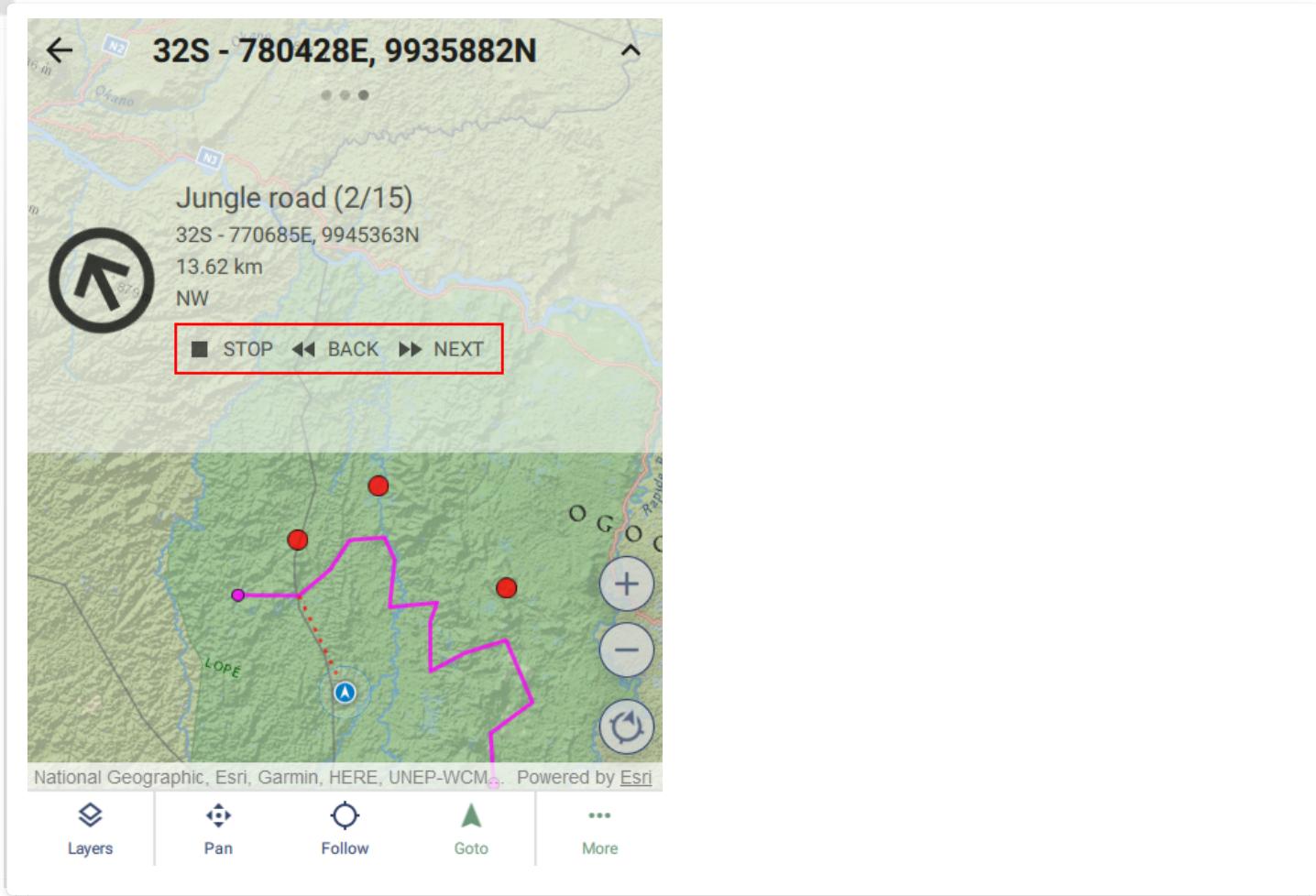
Layers Pan Follow Goto More

National Geographic, Esri, Garmin, HERE, UNEP-WCM... Powered by Esri

Layers Pan Follow Goto More

Tapping on the end points of a line route and tapping **Set goto** will configure the navigation system to target points along the line. Using **Back** and **Next** will move the target back and forward through the points on the line. If the device

reaches one of the points, the system will automatically advance to the next point on the line. The direction of movement depends on which point was selected as the original target. Selecting the first point will move forward and selecting the last point will move backwards.



7.3.5. LAYERS

A map is composed of layers and they can be configured on the **Layers page**. The layers are ordered top to bottom with the topmost layer being the overlaid on all others.

Layer Type	Description	Status
Incident	Incident layer	<input checked="" type="checkbox"/>
Patrol	Patrol layer	<input checked="" type="checkbox"/>
Tracks	Tracks layer	<input checked="" type="checkbox"/>
Route Demo	Route Demo layer	<input checked="" type="checkbox"/>
SMART map	SMART map layer	<input checked="" type="checkbox"/>

Below the layers are map base options:

- None
- OpenStreetMap
- OpenStreetMap - Humanitarian
- OpenTopoMap

The 'OpenStreetMap' option is selected on the right.

Incident and **Patrol/Survey** are the layers created by entering observations.

Tracks are the line captured automatically by the location track timer.

Route Demo is a route configured in the SMART Desktop (see section 6.4.). Routes can be deleted by swiping left on the route row and tapping **YES** to delete.

SMART map is an offline map configured in the Package settings (see section 6.3.5).

OpenStreetMap, etc are online layers which require an internet connection. **None** means that no online layer will be used. If no internet connection is available, the online map will not be used.

Layers can be shown or hidden by a switch on the left side of the layer row.

If a layer is enabled, a zoom to button is available on the right side of the layer row. This will zoom the entire layer into view, which is useful for navigation.

7.3.6. IDENTIFY

Tapping on a route point or observation will show the **Identify** page. Since tapping the screen may not be precise enough to select a single observation, all the points nearby the tap point are included and can be scrolled through one at a time using the **Previous** and **Next** buttons on the bottom toolbar.

If editing is allowed, the observation can be edited using the **Edit button** in the top right corner.

The location of the point can be used as a navigation target using the **Set goto** button in the bottom left corner.

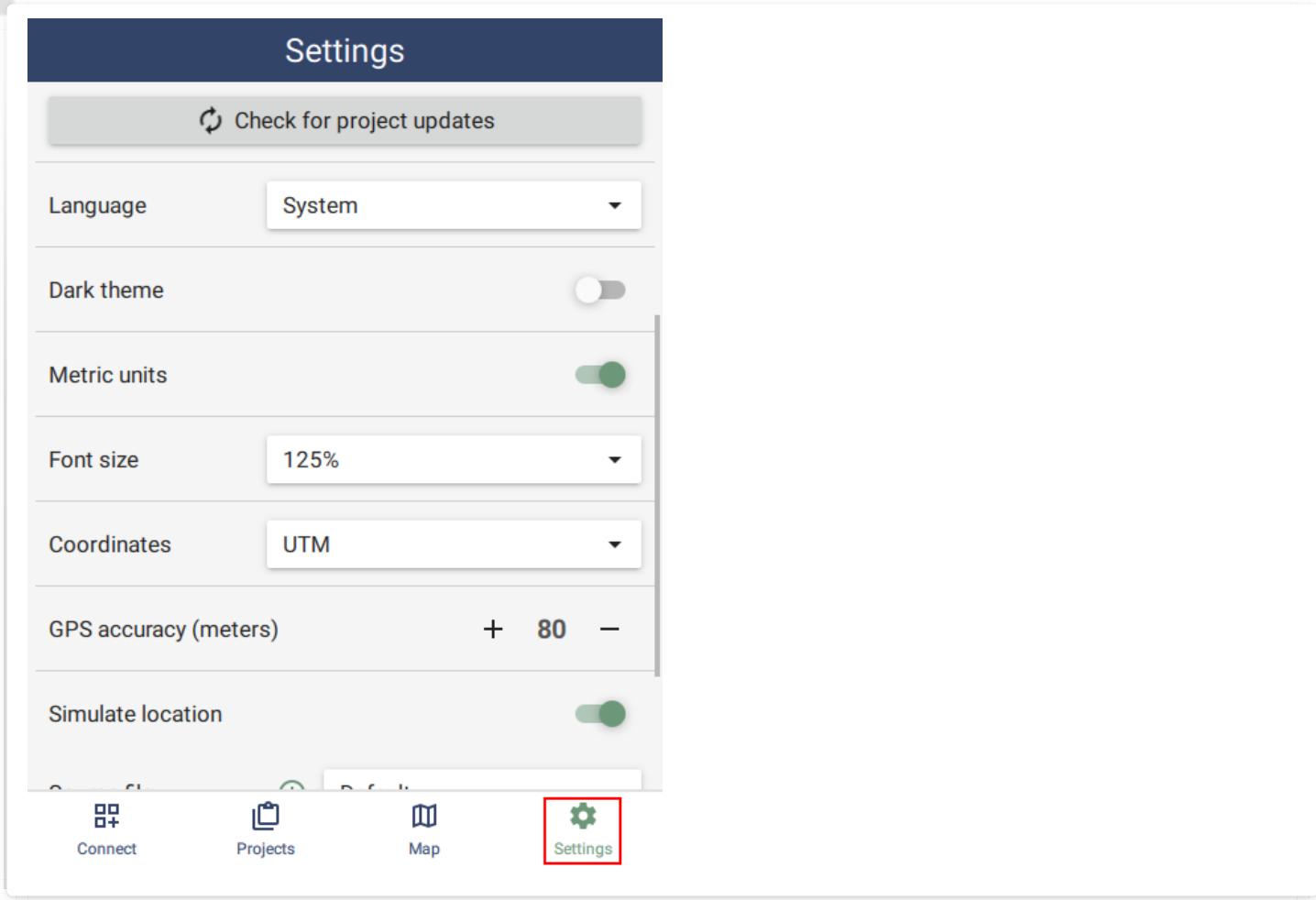
The screenshot shows the 'Identify - Sighting' page. At the top, it displays the date and time: 'Sun 2022/07/31 05:41:25'. Below that is the location: '32S - 783133E, 9928495N, 0 m'. A large grey bar labeled 'Observation' contains the following data:

Feeding	
Threat	None
Species	Cephalophus silvicultor (Yellow-backed Duiker)
Age of Sign	Very old

At the bottom, there are navigation buttons: 'Set goto' (with a location pin icon), 'Previous' (with a left arrow icon), and 'Next' (with a right arrow icon).

7.4. Settings tab

SMART Mobile has a **Settings** tab on the main page. These settings are for the whole application and cannot be configured by SMART Desktop:



7.4.1. CHECK FOR PROJECT UPDATES

The **Check for project updates** option attempts to update all the projects at the same time. This is useful for keeping all projects up to date. Project that fail to update will not be updated and no error message will appear.

7.4.2. LANGUAGE

Language governs the language of SMART Mobile, not the language of the data model. The data model language is specified in the package Settings, which is available only once the package has been launched.

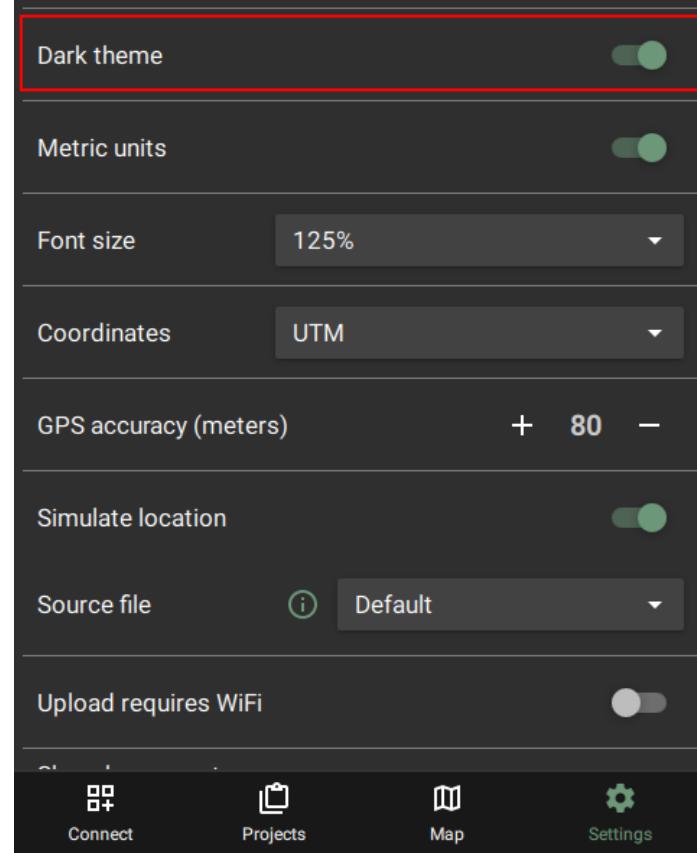
SMART Mobile supports over 100 languages. New languages are routinely added and existing languages can be modified to improve correctness. Contact the SMART Forum to report an issue.

If the language is set to **System**, then SMART Mobile will use the current language setting from the device, i.e. if the device language is French, then SMART Mobile will automatically select French.

7.4.3. DARK THEME

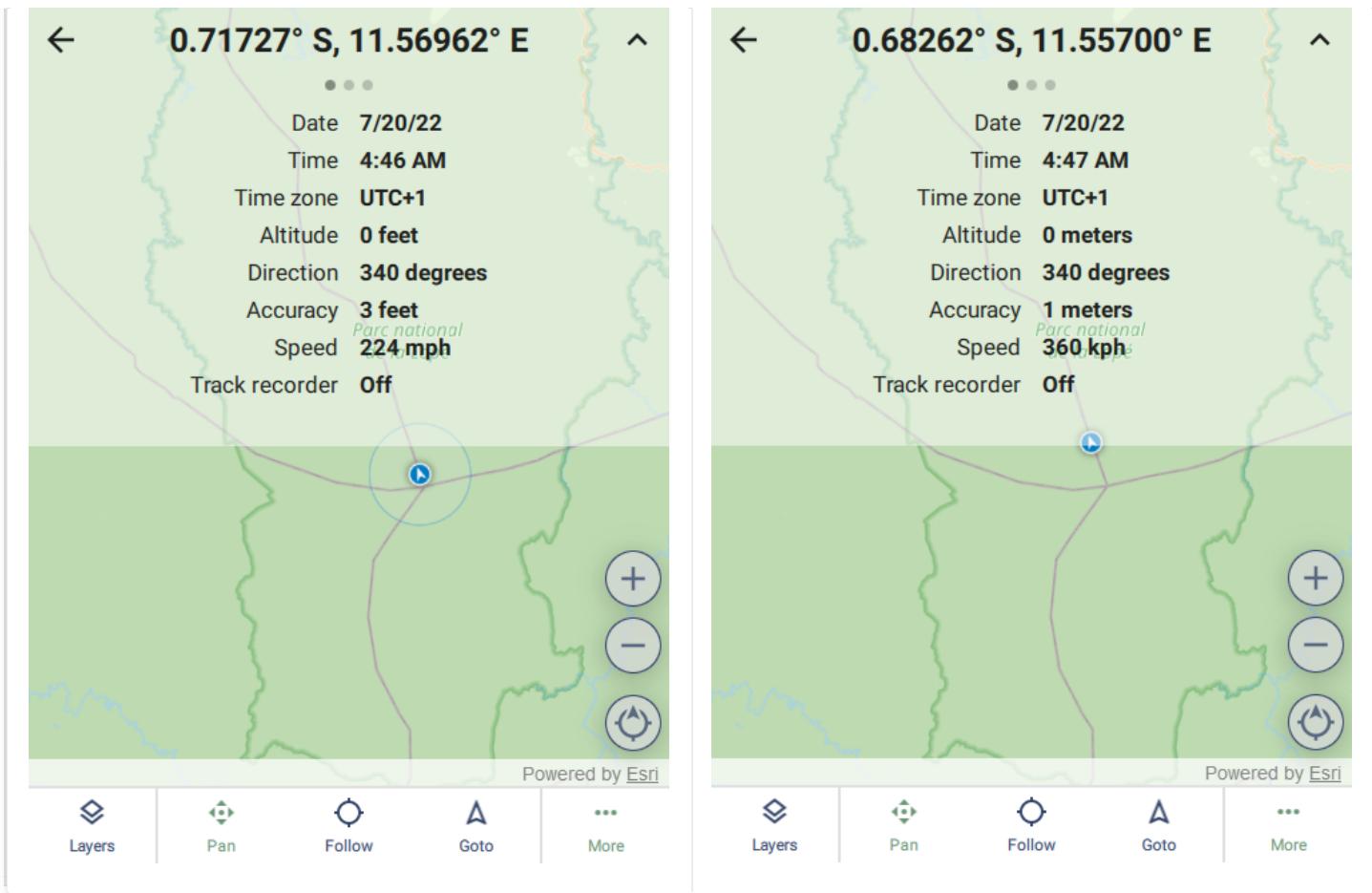
Light and dark themes are useful for improving the visibility of screen data. Dark theme is typically used for night viewing. It can also be toggled from the Project settings page and the Patrol/Survey popup:

Settings



7.4.4. METRIC UNITS

Metric Units toggles between metric (meters, km/h) and imperial units (feet, mi/h). This is mostly used when viewing GPS data and Patrol leg data.



7.4.5. FONT SIZE

Font size governs the size multiplier for text in SMART Mobile. The options are 100%, 125% (default), 150%, 175% and 200%. All parts of the application are scaled accordingly. For example, this shows the setting at 175% across various screens:

The image shows three screens of the SMART Mobile application with the font size set to 175%.

Settings Screen:

- Dark theme: Off
- Metric units: On
- Font size: 175%
- Coordinates: Decimal degrees
- GPS accuracy (meters): 80
- Simulate location: On
- Source file: Default
- Upload requires WiFi: Off

Map Screen:

- Coordinates: 0.63952° S, 11.54130° E
- Date: 7/20/22
- Time: 4:49 AM
- Time zone: UTC+1
- Altitude: 0 meters
- Direction: 340 degrees (de la Lope)
- Accuracy: 1 meters
- Speed: 360 kph
- Track recorder: Off

Patrol Screen:

- Sample Area: Water Hole
- Add observation

At the bottom of each screen are navigation icons: Connect, Projects, Map, Settings, History, Map, Patrol, Incident, and Save.

7.4.6. COORDINATES

Coordinates specifies the format used for GPS coordinates throughout the application. The options are: Decimal degrees, Degrees minutes seconds, Degrees decimal minutes and UTM (Universal Transverse Mercator):

Settings

The screenshot shows the 'Settings' screen of the SMART Mobile application. It includes the following sections:

- Dark theme:** A toggle switch.
- Metric units:** A toggle switch.
- Font size:** A dropdown menu set to 125%.
- Coordinates:** A dropdown menu currently set to "Decimal degrees". Other options shown are "Degrees minutes seconds", "Degrees decimal minutes", and "UTM". This entire section is highlighted with a red box.
- GPS accuracy (meters):** A dropdown menu.
- Simulate location:** A dropdown menu.
- Source file:** A dropdown menu set to "Default".
- Upload requires WiFi:** A toggle switch.
- Share hui report:** A section with four icons: "Connect" (gear), "Projects" (document), "Map" (map), and "Settings" (gear).

7.4.7. GPS ACCURACY (METERS)

The device GPS estimates the uncertainty in the reading provided. High values are usually caused by poor satellite geometry or obstructions. This setting provides a top level filter to help reduce the overall error in location readings.

7.4.8. SIMULATE LOCATION (DESKTOP ONLY)

The desktop version supports a GPS simulator. This simulator can read locations from an NMEA file. A new simulator path can be created using <https://nmeagen.org>. Once a path has been defined, download the resulting nmea file into the Downloads folder. The next time SMART Mobile starts up, it can be selected as the **Source file** for locations.

Settings

Dark theme	<input type="checkbox"/>		
Metric units	<input checked="" type="checkbox"/>		
Font size	125% <input type="button" value="▼"/>		
Coordinates	Decimal degrees <input type="button" value="▼"/>		
GPS accuracy (meters)	+ 80 -		
Simulate location	<input checked="" type="checkbox"/>		
Source file	 Default <input type="button" value="▼"/>		
Upload requires WiFi	<input type="checkbox"/>		
Share bug report			
 Connect	 Projects	 Map	 Settings

7.4.9. UPLOAD REQUIRES WIFI (ANDROID ONLY)

Uploading data to a server will incur cellular data costs. If sending pictures, audio or long patrols, this could be a significant amount of data. This feature prevents data upload until the connection being used is WiFi.

7.4.10. BUG REPORTS

See section 9.1 on creating bug reports.

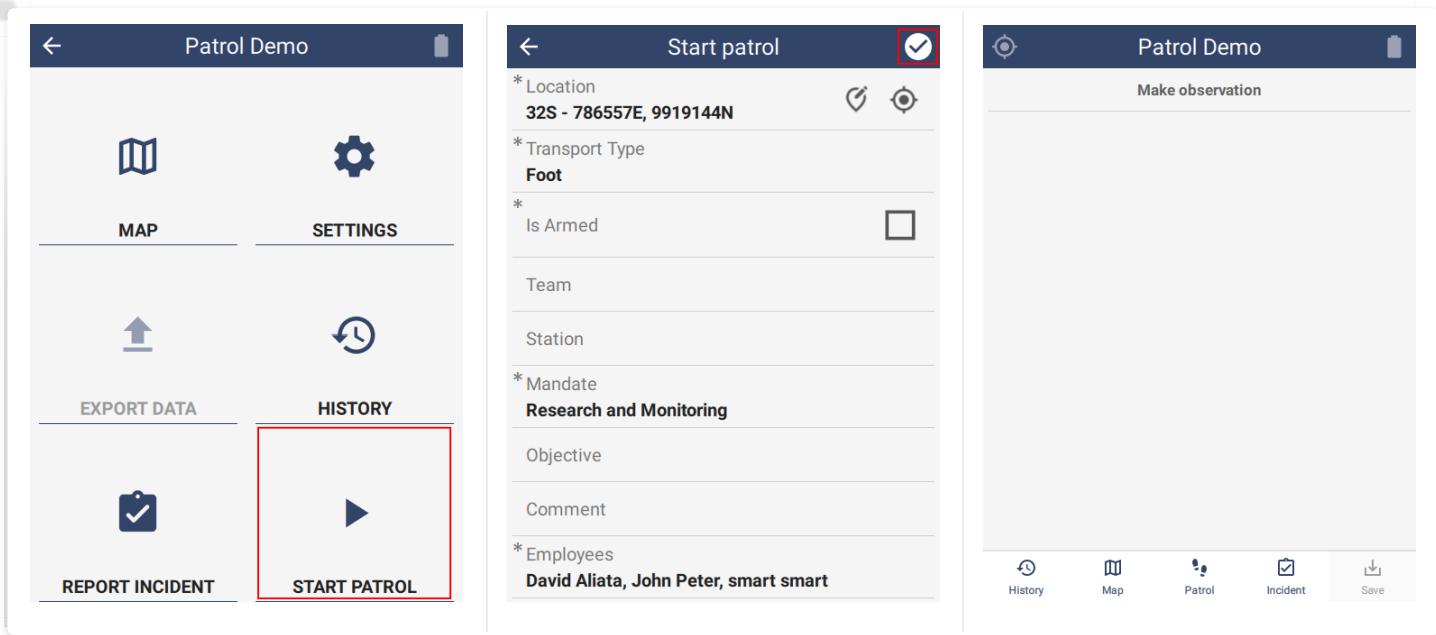
8. Project usage

8.1. Patrols and Surveys

A Patrol or Survey is a group of observations. Along with observational data, the system tracks metadata, e.g. transport type, objective and employees. These properties can be configured on the desktop (see section 6). Patrols/Surveys can be started/stopped, paused/resumed and the metadata can be modified at any time.

8.1.1. START PATROL

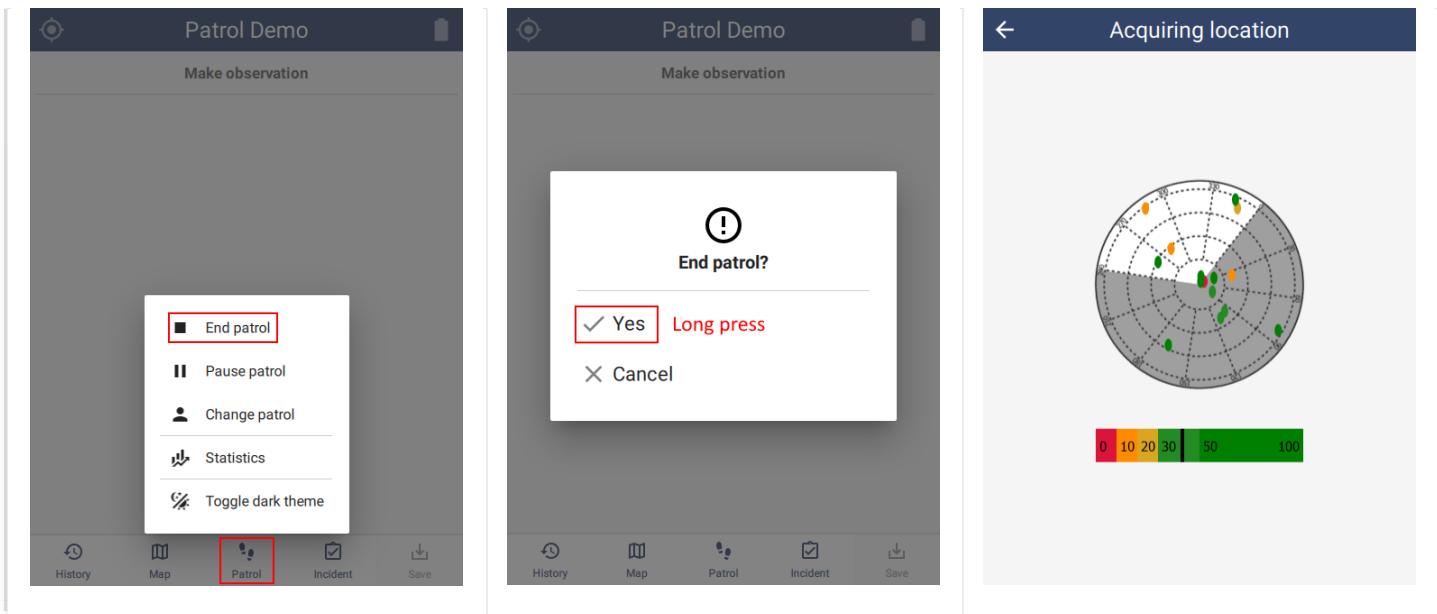
To start a new patrol, tap **START PATROL** on the project start page. The metadata page will appear. Fill in the metadata and tap the check mark in the top right corner. Note that attributes marked with a '*' are required. If the **Transport Type** is an air or water type, then a Pilot row will appear.



Once a patrol has started, the **Observation** page is displayed.

8.1.2. END PATROL

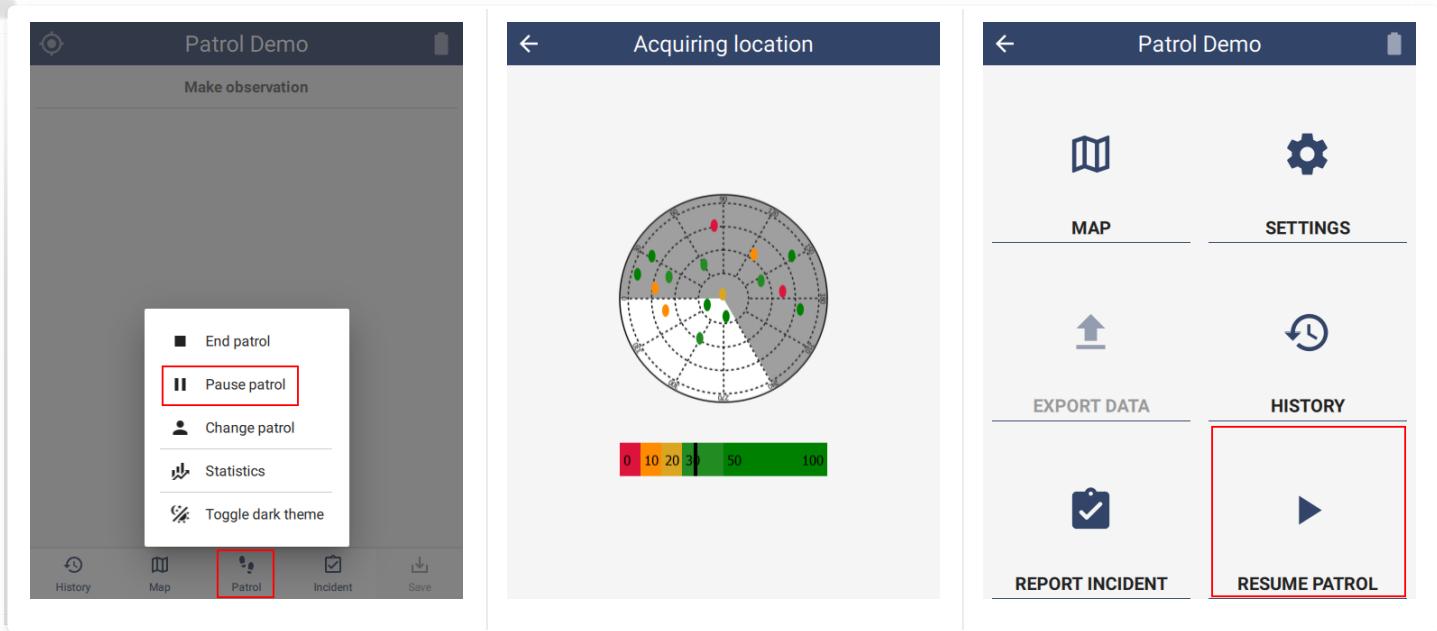
To end a patrol, tap the **Patrol** button on the toolbar at the bottom of the Observation page. Then tap the **End patrol** option. A popup will appear asking for confirmation. Press and hold **Yes**. A final location will be taken and then the patrol will be completed. If the back button is pressed on the **Acquiring location** page, then the **End patrol** operation will be canceled.



8.1.3. PAUSE PATROL

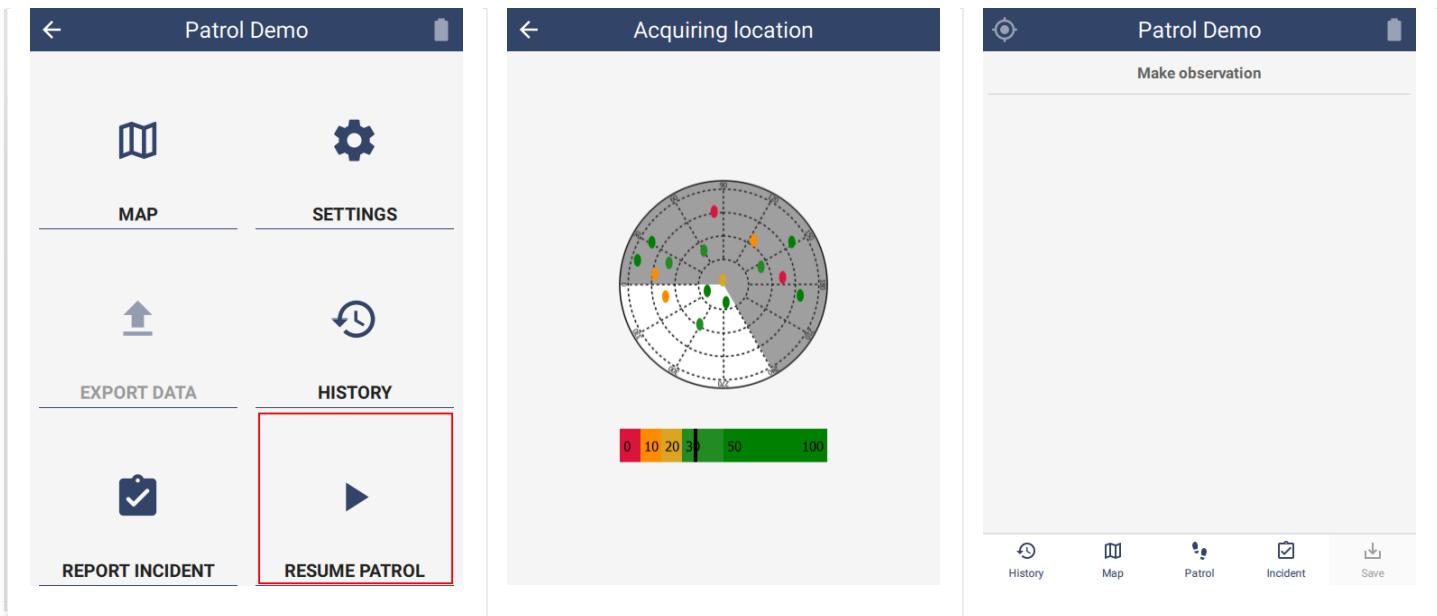
To pause a patrol, tap the **Patrol** button on the toolbar at the bottom of the Observation page. Then tap the **Pause patrol** option. A location will be taken and then the patrol will be paused. The START PATROL button is now labeled **RESUME PATROL**.

Pausing a patrol can be disabled in the configuration (see section 6.5.1.4). In this case, the **Pause patrol** option will not be available.



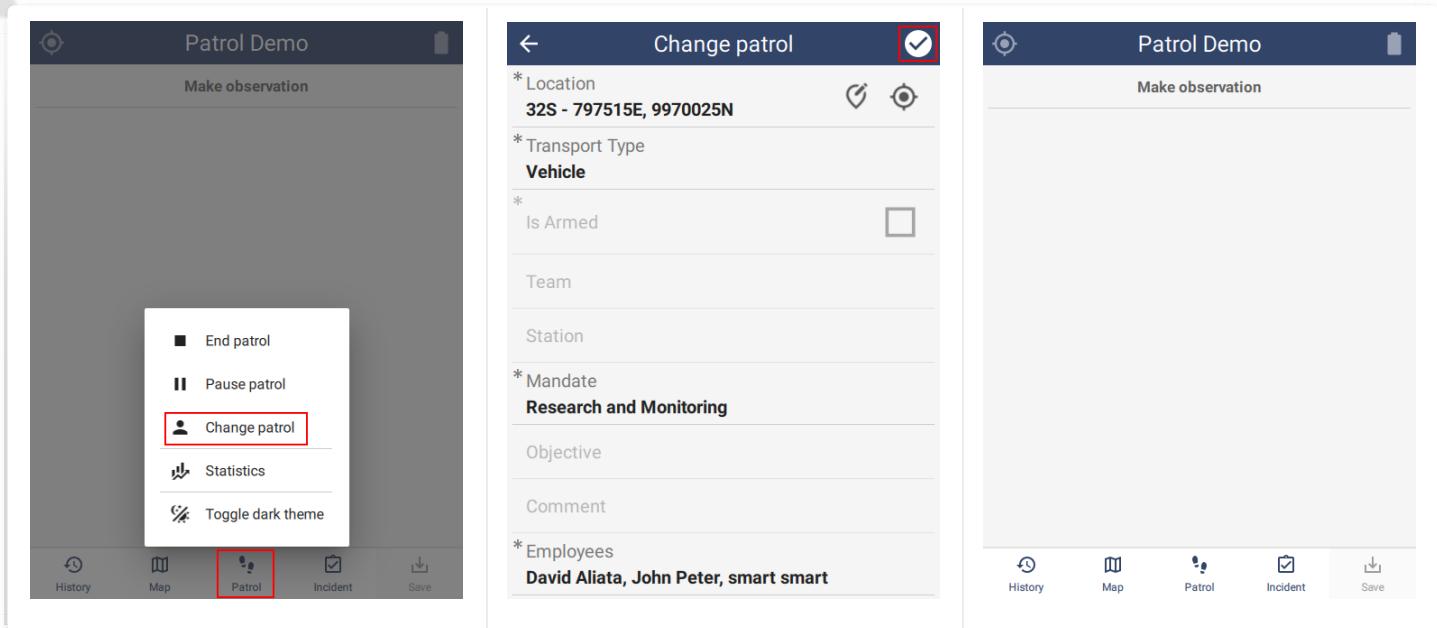
8.1.4. RESUME PATROL

To resume a patrol, tap the **RESUME PATROL** button on the start page. A location will be taken and then the patrol will be resumed.



8.1.5. CHANGE PATROL

During the patrol, it is often necessary to change the patrol metadata. For example, if the transportation type changes or team members change. To do this, tap the **Patrol** button on the toolbar at the bottom of the Observation page. Then tap the **Change patrol** option to bring up the metadata page. Several attributes will be disabled and cannot be changed at this time. If no change is made to the metadata, no observation will be saved. This means that the **Change patrol** feature can be used to verify the metadata at any time.



8.1.6. STATISTICS

SMART Mobile keeps track of the legs of a patrol. To see these, tap the **Patrol** button on the bottom toolbar of the Observation page. Then tap the **Statistics** button to view the patrol state. Each change of the patrol metadata will result in a new leg. The current leg is topmost and highlighted.

The screenshot shows the Patrol Demo application interface. On the left, a dark grey sidebar contains a "Make observation" button. A white modal window is open, listing patrol control options: "End patrol", "Pause patrol", "Change patrol", "Statistics" (which is highlighted with a red border), and "Toggle dark theme". Below the modal is a toolbar with five icons: History, Map, Patrol (which is also highlighted with a red border), Incident, and Save.

Statistics

Leg 2 - Vehicle - Active

Start date 7/31/22
Start time 3:40 AM
Distance 12.20 km
Average speed 333 kph
Track recorder 50 m

Leg 1 - Foot

Start date 7/31/22
Start time 3:20 AM
Distance 9.41 km
Average speed 2kph
Track recorder 300 seconds

8.2. Independent incidents

Independent incidents are observations which are not connected to a Patrol/Survey. There are two ways of creating an Independent incident: directly from the start page with the **REPORT INCIDENT** button, or during a Patrol/Survey using the **Incident** button on the bottom toolbar. These two methods are identical.

Capturing an incident during a patrol/survey does not affect the patrol/survey in any way.



Make observation



MAP

SETTINGS



EXPORT DATA

HISTORY



REPORT INCIDENT

START PATROL

History

Map

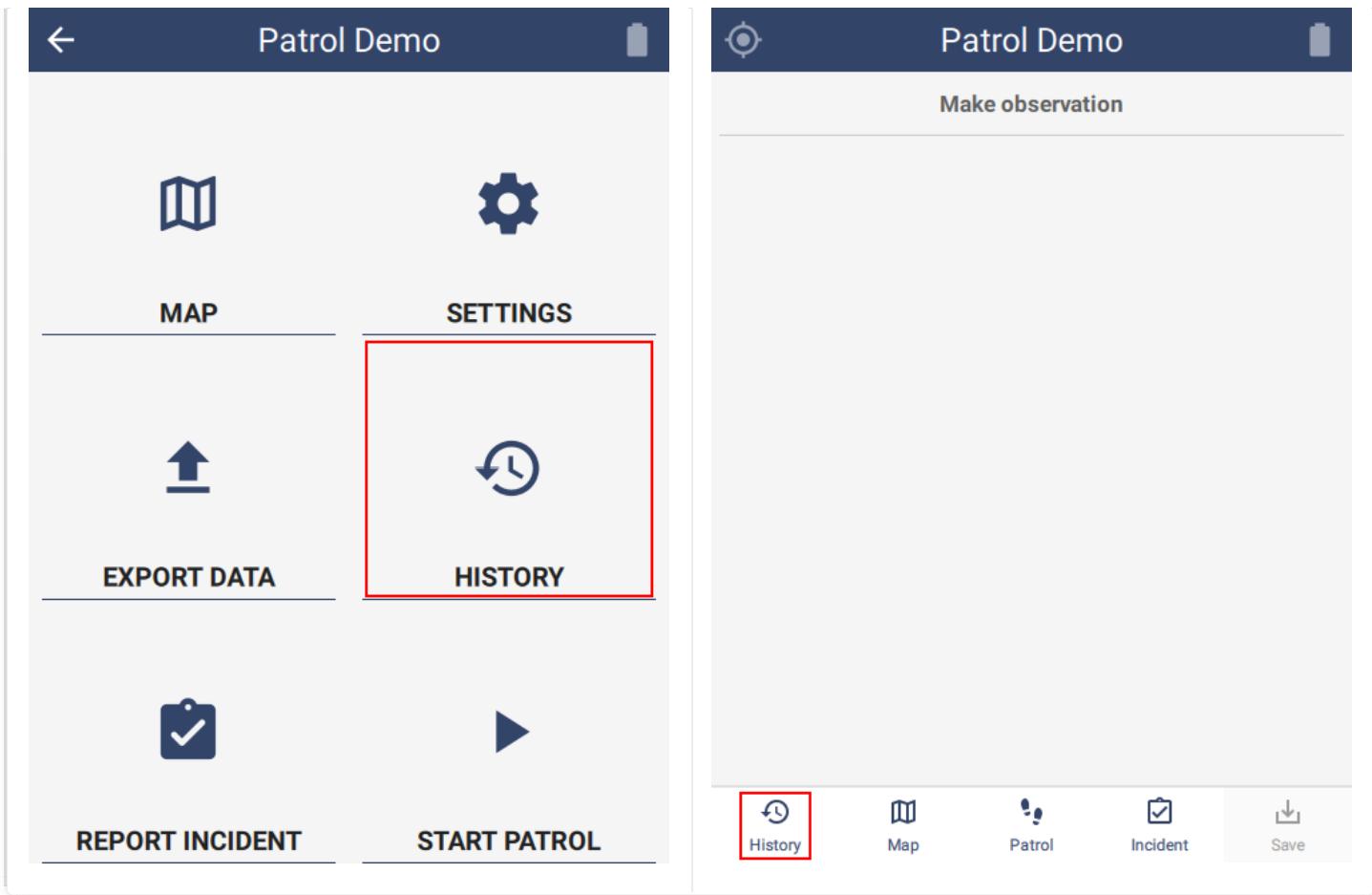
Patrol

Incident

Save

8.3. History

History shows the most recent patrol/survey and incident data. There are two ways to access the history: directly from the start page with the **HISTORY** button or using the **History** button on the bottom toolbar during a patrol/survey.



The history page has a **Patrol** tab and an **Incident** tab. If the project does not have both a patrol/survey and independent incidents, then there will be no tabs, i.e. the screen will just have a single history list.



History

**Start patrol**

Sun 2022/07/31 05:41:48

Firewood

Sun 2022/07/31 05:42:17

Nest

Sun 2022/07/31 05:42:48

Fire

Sun 2022/07/31 05:43:08

Pause patrol

Sun 2022/07/31 05:43:21

Resume patrol

Sun 2022/07/31 05:43:31

Infrastructure & Roads

Sun 2022/07/31 05:43:57

Change patrol

Sun 2022/07/31 05:44:10

Trophies seized

Sun 2022/07/31 05:44:55



Sighting



Sun 2022/07/31 05:42:17

32S - 781558E, 9932796N, 0 m

Observation**Firewood**

Threat None

Action Taken Items Confiscated

Age of Sign Old

Timber Tree Species Rosewood

Number of Bundles 9

Patrol

Leg # - 0 m

I <
First<
Previous>
Next> I
Last

Statistics can be accessed using the button in the top right corner, even after the patrol/survey has ended.

8.4. Editing

Saved observations can be changed before export.

To edit an observation, locate it using **Map identify** or via the **History page**. Then tap the edit icon in the top right corner of the screen. The observation home screen will then be shown with two large buttons at the bottom. **X** cancels the edit and the **check** confirms any changes.

The image shows two screenshots of the SMART Mobile app interface. The left screenshot displays a 'Sighting' details page with a blue header containing a back arrow, the title 'Sighting', and a red edit icon. Below the header are the date and time 'Sun 2022/07/31 05:41:25' and location coordinates '32S - 783133E, 9928495N, 0 m'. A dark grey bar labeled 'Observation' is visible above a section titled 'Feeding'. The 'Feeding' section contains three entries: 'Threat' (None), 'Species' (Cephalophus silvicultor (Yellow-backed Duiker)), and 'Age of Sign' (Very old). Each entry has a small red cherry icon to its right. At the bottom of this section are navigation buttons: 'First', 'Previous', 'Next', and 'Last'. The right screenshot shows a 'Feeding' observation screen with a blue header labeled '(edit)' and the project name 'Patrol Demo'. It features a red edit icon and a red battery icon. The main area is titled 'Feeding' with a red cherry icon and includes a 'Add observation' button. At the bottom are two circular buttons: a white one with a black 'X' and a green one with a white checkmark, both enclosed in a red rectangular box.

Editing is disabled when:

- The device configuration specifically disables editing. See section 6.5.1.5.
- The observation is a patrol/survey management observation, e.g. start, stop, pause, resume, change metadata.
- The observation has already been exported.

8.5. Export data

See section 5 on **Retrieving data..**

8.6. Settings page

SMART Mobile has a Settings page for each Project. This provides configuration options and other features which are less commonly used.



Settings

Language

English (United States)



Dark theme



Page mode



Select routes



Change project



Exported data



Configuration



Recover Connect data



8.6.1. LANGUAGE

The language here is defined in the **Conservation Area Properties** dialog, off the **Conservation Area** menu.

 Conservation Area Properties

Conservation Area Properties

Properties related to the Conservation Area.



Identifier:	SMART
Name:	Example Conservation Area
Description:	Training Database
Designation:	
Organization:	
Point of Contact:	
Country / Location:	
Owner:	
Logo:	Not Set
	<input type="button" value="..."/> <input type="button" value="clear"/>
Fallback Language:	English [en]
Supported Languages:	Afrikaans [af] English (South Africa) [en_ZA] English (United States) [en_US] Wolof (Senegal) [wo_SN]
	<input type="button" value="Add"/> <input type="button" value="Delete"/>
Unique System ID:	8f7fbe1b201a4ef4bda814f5581e65ce

In SMART Mobile, the current language can be selected from the available languages in the Conservation Area.



Settings

Language

English (United States)



Dark theme



Page mode



Select routes



Change project



Exported data



Configuration



Recover Connect data



8.6.2. DARK THEME

Light and dark themes are useful for improving the visibility of screen data. Dark theme is typically used for night viewing. It can also be toggled from the main settings page and the Patrol/Survey popup:



Settings

Language

English (United States)



Dark theme



Page mode



Select routes



Change project



Exported data



Configuration



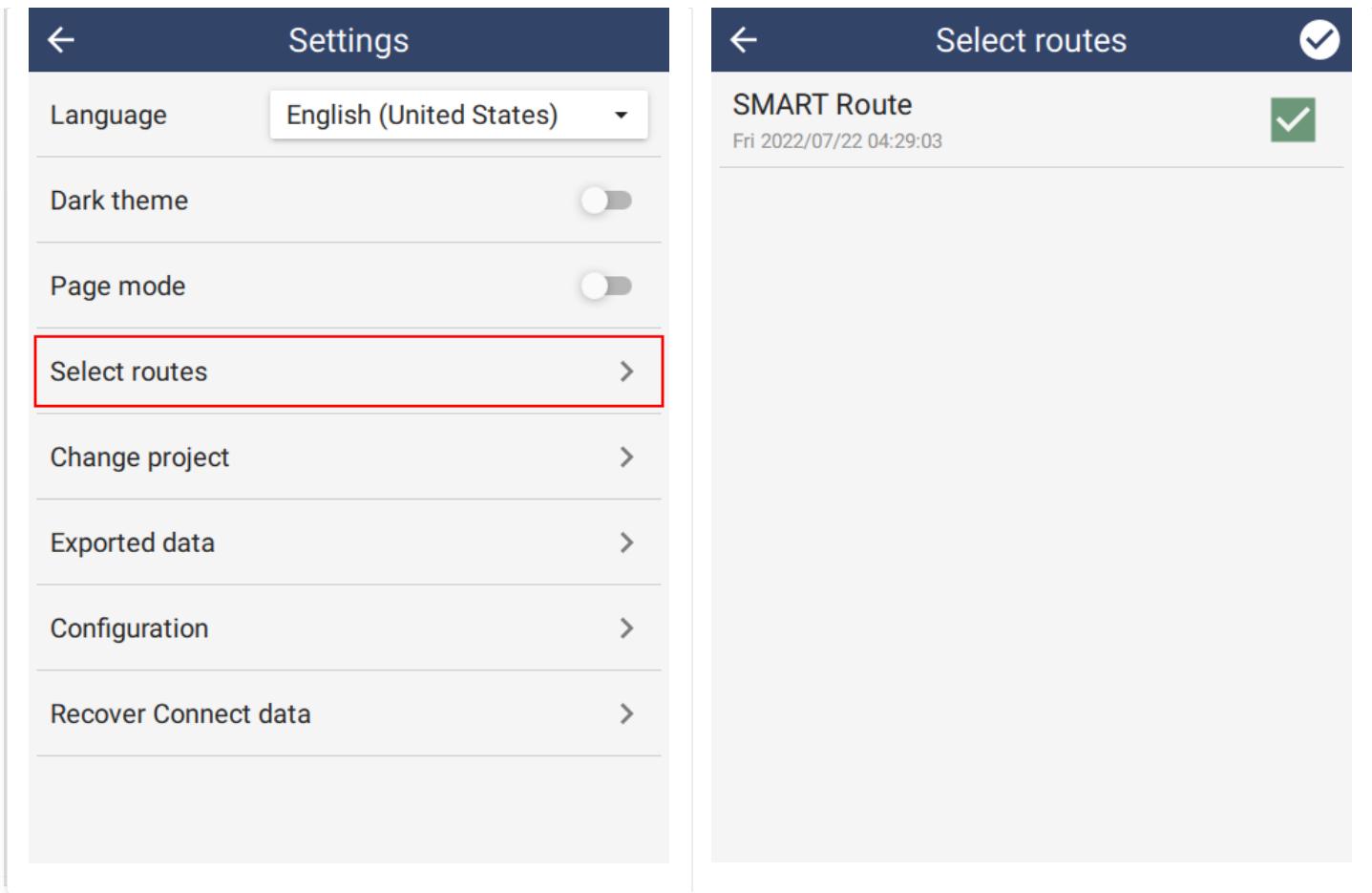
Recover Connect data



8.6.3. ROUTES

See section 6.4 on routes.

Routes are points and lines that are overlaid on the map. This option allows download of new routes from the SMART Connect server.



8.6.4. CHANGE PROJECT

The **Change project** option provides a simple way to change the current project. Normally this would require exiting the project and returning to the main screen. However, by placing the option here as well, it works within Kiosk mode. See section 4.



Settings

Language

English (United States)



Dark theme



Page mode



Select routes



Change project



Exported data



Configuration



Recover Connect data



8.6.5. EXPORTED DATA

The **Exported data** option shows data files that have previously been exported using the **EXPORT DATA** option on the project page. The primary purpose of this view is to provide visibility into the export process and help troubleshoot and prevent data loss. See section 9.2 on **Recovering Exported data**.

8.6.6. CONFIGURATION VIEW

The **Configuration view** option shows the SMART desktop configuration settings. This is primarily useful for troubleshooting.

Settings		Configuration	
Language	English (United States)	Type	Patrol
Dark theme	<input checked="" type="checkbox"/>	Incidents	Yes
Page mode	<input checked="" type="checkbox"/>	Connection	Online
Select routes	>	Upload	On export
Change project	>	Observer	No
Exported data	>	Distance and Bearing	No
Configuration	>	Incident group UI	Yes
Recover Connect data	>	Kiosk mode	Yes
		Can pause	Yes
		Disable editing	No
		Fix count	3
		Track timer	300 seconds
		Use time from GPS	Yes
		Skip button timeout	3 seconds
		Allow manual GPS	Yes

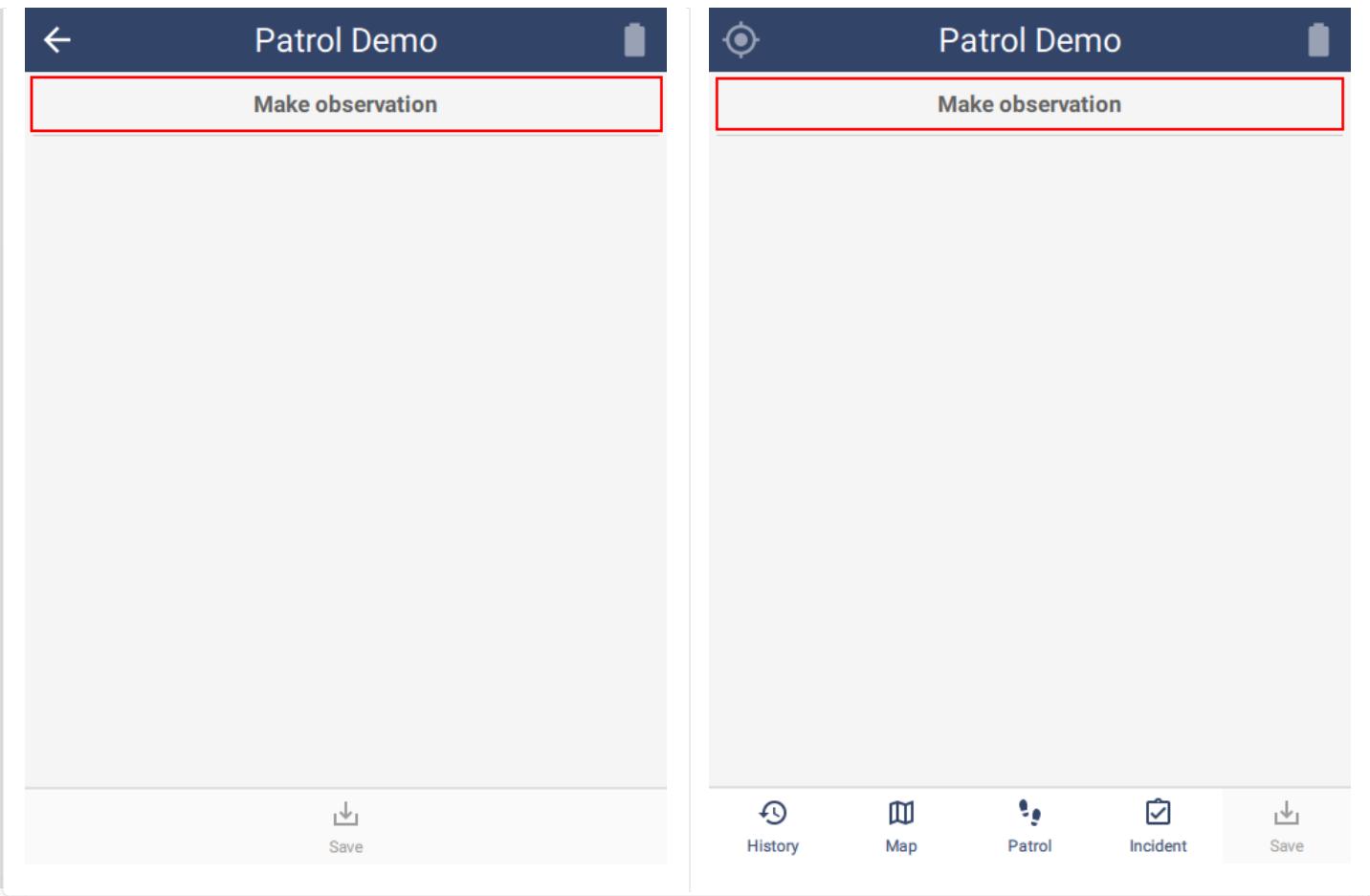
8.6.7. RECOVER CONNECT DATA

The **Recover Connect data** is designed to recover data when a Connect server is no longer working. See section 9.3 on **Recovering Connect data**.

8.7. Collecting data

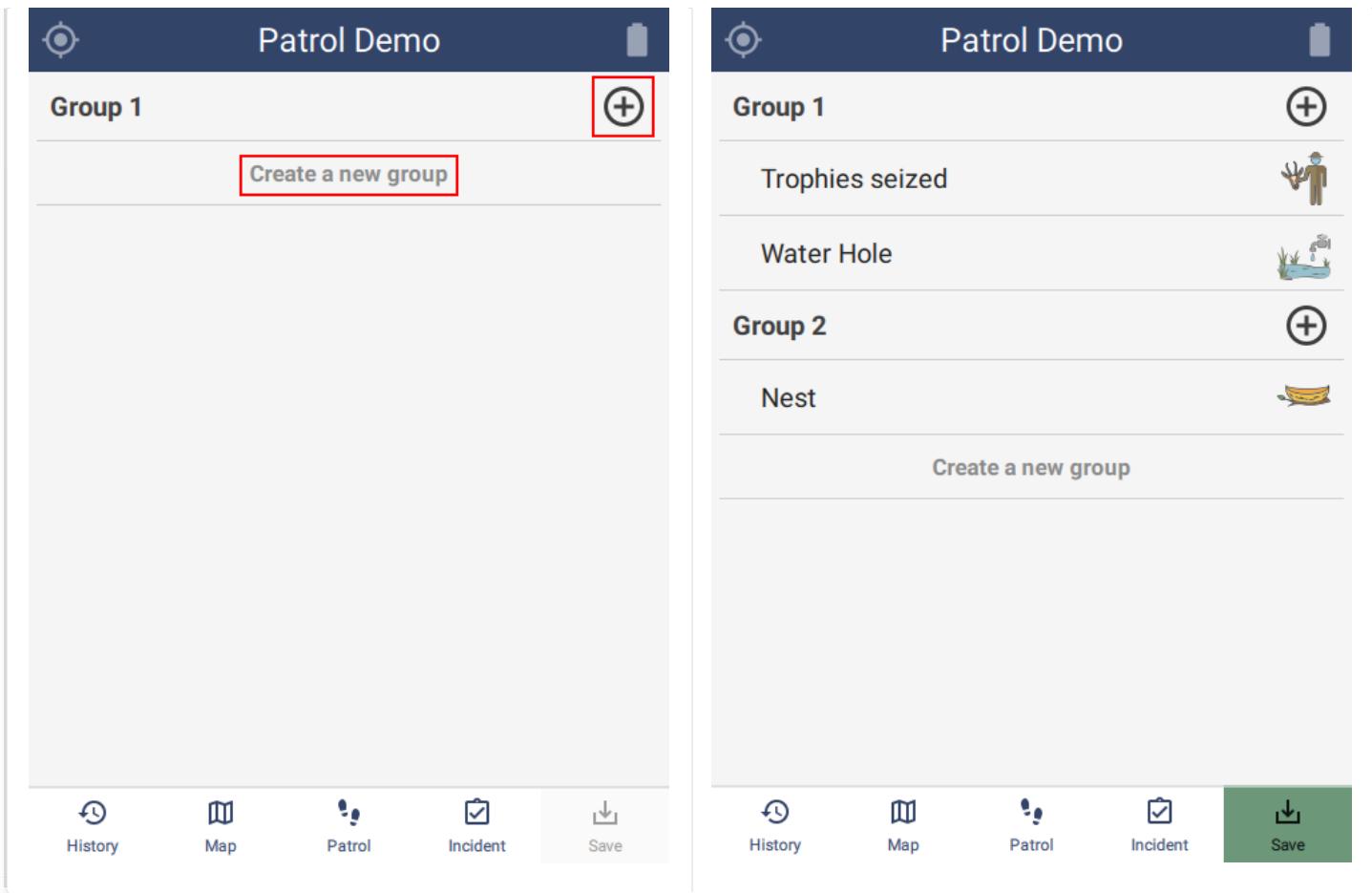
8.7.1. ADDING OBSERVATIONS

An incident is composed of one or more observations. To create a new observation, tap the **Make observation** button on the observation home page.



8.7.2. ADDING OBSERVATIONS WITH 'INCIDENT GROUP UI'

If **Incident Group UI** is enabled in **Device Settings** (see section 6.5.1.1.), then the process of creating new observations is different. In this case, observations are organized into groups. Tapping the '+' sign will add a new observation to that group. Tapping **Create a new group** will add a group.



Make observation navigates the user to a data model selection page. Each option navigates the user through the model until a set of concrete questions are reached. For example, the user taps **Wildlife** then **Trophies seized** and then reaches a set of attributes to be completed.

Demo Configurable Model	Wildlife	Trophies seized
Human Activity	Wildlife - direct observation	Threat Hunting <input checked="" type="checkbox"/>
Wildlife	Wildlife - indirect sign	Species HIPPOPOTAMIDAE
Features	Carcass	Type of Trophy Tusks
Position	Trophies seized	Number of Trophies 2

After tapping the check in the top right corner of the screen, the observation will appear on the observation home screen. Note that the **Save button** is now enabled. Other observations can be added using the **Add observation** button.

Trophies seized

Add observation

History Map Patrol Incident **Save**

Trophies seized

Water Hole

Nest

Add observation

History Map Patrol **Save**

8.7.3. DELETE OBSERVATIONS AND GROUPS

Removing an observation or group can be done by **swiping left** and tapping **YES** to confirm.

8.7.4. SETTING ATTRIBUTES

Attribute data is set according to the type. NUMERIC - see section 6.1.2.1. TEXT - see section 6.1.2.2. LIST - see section 6.1.2.3. MULTI LIST - see section 6.1.2.4. TREE - see section 6.1.2.5. BOOLEAN - see section 6.1.2.6. DATE - 6.1.2.7.

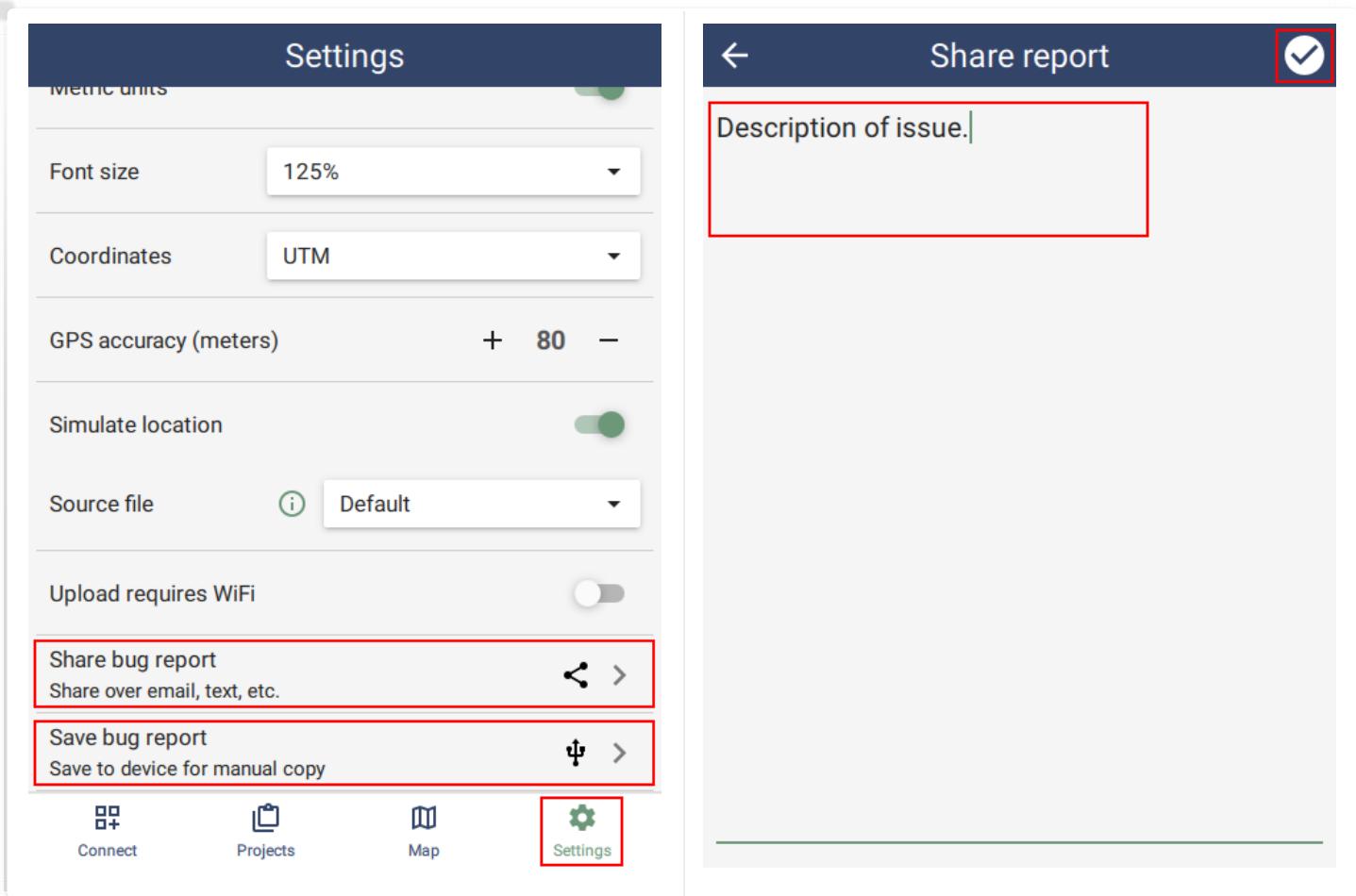
8.7.5. RESET ATTRIBUTES

Reset of an attribute can be done by **swiping left** and tapping **YES** to confirm.

9. Troubleshooting

9.1. Creating a bug report

When reporting an error or unexpected condition, a bug report is essential. When asked to create one, go to the main **Settings** tab and scroll to the bottom:



Share bug report requires that the device has a network connection. The bug report will be created and sent to the device sharing system. This allows sending over various channels like email, Whatsapp, etc. The report can also be beamed to another device via NFC or Bluetooth.

Save bug report is only available on Android. This saves the report to a file on the device and it can then be retrieved using a USB cable.

Bug reports contain a full copy of the SMART Mobile data on the device. This includes confidential information such as the access to Connect servers and even old data. They should therefore be handled carefully.

9.2. Recovering Exported data

SMART data is exported to JSON files. If the normal import operation is not functioning, then it is possible to retrieve the JSON files from the device and import them manually. To do this, go to the **Settings** page and tap **Exported data**. Then tap the file to retrieve and the **Share** button. This will open the sharing options for the device. Send the file through another channel and copy it to the SMART Desktop computer.

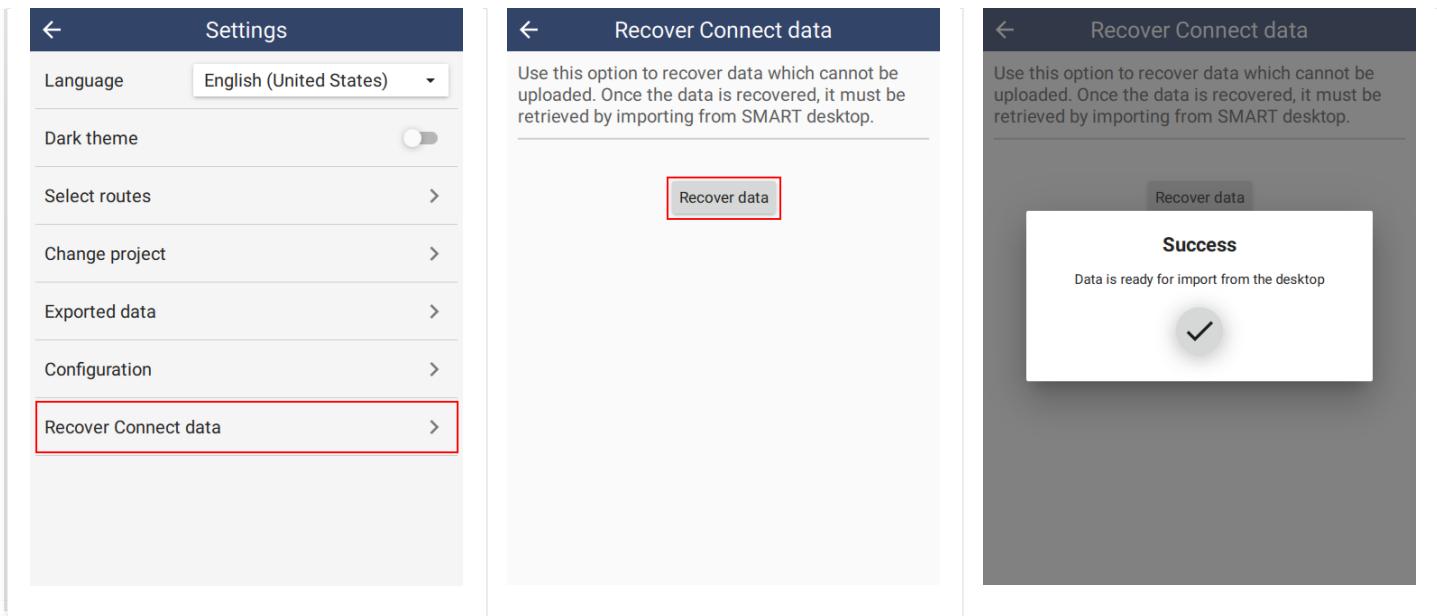
The screenshots show the SMART Mobile application's user interface. The first screen is the 'Settings' page, which includes options for language (English United States), dark theme, select routes, change project, and 'Exported data'. The 'Exported data' option is highlighted with a red box. The second screen is the 'Exported data' page, showing a single file entry: '2022-07-29 06:32:34' (3 mb). The third screen is a detailed view of the export, listing project details like 'Animals & Samples Ex...', start date (Fri 2022/07/29), and stop date (Fri 2022/07/29), along with sighting and location counts.

Open the **Import SMART Mobile Data** dialog, **Add** the file and click **Import**.

This screenshot shows the 'Import SMART Mobile Data' dialog. It has sections for 'SMART Mobile Import' and 'Import From: Device' (radio button), 'Files' (radio button, selected), and 'Archive'. A list of files is shown, with 'CTDATA_2022-07-29T06_32_34_Patrol-0001.json' selected. On the right, there are 'Add', 'Delete', and 'Details' buttons. At the bottom are 'Import...' and 'Cancel' buttons, with 'Import...' highlighted with a red box.

9.3. Recovering Connect data

If SMART Mobile is configured to send data to SMART Connect and the Connect server is not available, outstanding data can be recovered using the **Recover Connect data** option off the **Settings** page. All the data that would ordinarily have been sent to Connect is exported to a file. This can then be downloaded over USB cable or shared using another channel (see **Recovering Exported Data** above).



9.4. Waiting for time correction

When the device is first used, the message **Waiting for time correction** may appear. This is a one time operation where SMART Mobile is calibrating the device clock to ensure that the time is correct.

If this is taking a long time, try taking the device into an open area to make sure that the GPS has a good reading.

9.5. Android device data

If importing the data from the device is not working, it is possible to retrieve exported data directly from the device.

Connect the device to Windows and set the **USB mode** to **File transfer**.

Open Windows Explorer and navigate to the folder:

|Android|data|org.cybertracker.mobile.smk|files|SMARTdata

This folder contains the JSON data files.

10. Frequently Asked Questions

10.1 On which types of patrols should there be data collection?

ALL patrols should have data collected. Regardless of objective (e.g. law enforcement, surveillance, tourism) or transport types (e.g. foot, boat, motorbike, car, roadblock).

10.2 Which observations should be recorded?

All observations that fall under the categories in the data model (e.g. signs of wildlife live and dead, human activity, natural features) should be seen as a priority to record. Consider the needs, threats and objectives of the protected area and how the data collected will be used (i.e. adaptive management, research, etc.). Each site should detail the data collection procedures relating directly to the needs at the site.

10.3 What handheld devices/smartphones should we buy for our protected area?

General Considerations

Each site is unique and therefore it is difficult to prescribe a specific device to suit all needs. However, we recommend SMART users consider the following before selecting the device they wish to use and consulting the SMART Community Forum for advice from other users. **Tip:** *It is recommended that sites try to standardize the devices they are using, to avoid conflicting or variable results.*

- 1 **Ruggedness:** How much abuse will the device take from its users and how wet and/or dusty is the environment the devices will be used in.
- 2 **GPS sensitivity:** How difficult is it to get a GPS reading in the environment in which they will be used? Some devices are better at dealing with tree canopy, cloud, terrain, etc. than others.
- 3 **Form factor:** Device size, screen size, weight, etc. Larger screens make text entry easier and help to prevent inadvertent selection of incorrect choices in lists. The advantages of larger devices and screens must be weighed against their increased power requirements and bulkiness. While there are many ruggedized tablets on the market, this discussion focuses on devices that are similar in size to smartphones or PDAs, under the assumption that tablets will be too bulky for most rangers to carry in the field.
- 4 **Battery life:** How long must the devices be used in between charging? This is highly dependent on how the devices are used, i.e., how many observations are recorded each day, what is the frequency of track log point collection, how detailed are the observations being recorded (lengthier entries require the screen to be on longer and using the screen is one of the major sources of power consumption). Also, especially at sites where power fluctuates, battery failure is one of the most common causes of device problems. Many mobile devices nowadays have built-in batteries that cannot be easily changed, meaning that when the battery goes bad, they have to be returned to the manufacturer for service or replaced.
- 5 **Operating system:** SMART can be locked to run in kiosk mode using the installation process described above.

10.4. What should we do if SMART Mobile device stops working during a patrol?

It is best practice to always have a backup. Collect data using GPS and datasheets/notebooks as well whenever possible. Note down when the device stopped working.

10.5. What should we do if GPS battery dies?

As above. Keep collecting data – ensure to write down the date and time of observation. Carry on patrol as normal.

10.6. What should we do if we run out of datasheets?

If you have a notebook, you can make notes, or use the back of the datasheets to collect data. Try to ensure the same information is recorded. Carry on patrol as normal.

10.7. What should we do if the camera stops working/battery becomes flat?

If you have a phone with you that takes photos, you can use that. If not just carry on your patrol as normal and describe the observations as best as possible using comments and/or during the patrol debrief.

10.8. I am running SMART on a Mac computer but cannot import patrols from SMART Mobile, why?

The desktop application of CyberTracker is **only** available for **Windows**, meaning that the import or export of Patrol/Survey Configurable Models or data collected from the field cannot be currently done on a Mac OS or Apple computer not running Windows.

10.9. My Android device will not connect to my computer and I can't install CyberTracker/import patrols, what can I do?

- 1 Make sure the device is plugged into the computer and enabled to 'Transfer Files'. To do this, swipe down on the top of the screen and change from 'USB Charging' to 'Transfer Files'. - This is a common issue with getting the .apk file for CyberTracker for the first installation.
- 2 With the device plugged in, 'Export the Patrol Configurable Model' to the device, the first time, you should get an error message saying that Before CyberTracker can be used it must be installed on the device.
- 3 Check the 'File Manager' for the .apk file. It should appear near the bottom of the Internal Storage window. Here, you will need to give the device permission to open the file.
- 4 Once it is installed, you can resend the Patrol Configurable Model to the device and it should work. If the device has been disconnected, follow Step 1 again.



Figure 8. Devices not properly set to 'Transfer Files' under USB settings is a common issue when using CyberTracker/SMART Mobile. Photo: J.Slade/GWC

10.10 Android settings and troubleshooting SMART Mobile

For most SMART Mobile users we recommend turning off advanced location features, as these "high accuracy" setting are often less accurate in the places we work.

Below are details on how to set your phone to use GPS only location settings based on [\[this guidance from Google\]](#).

Android 10

- 1 Open your device's Settings app.
- 2 Tap Location.
- 3 Tap Wi-Fi and Bluetooth scanning.
- 4 Turn both Wi-Fi scanning and Bluetooth scanning to **off**.
- 5 Go back a screen
- 6 Turn Emergency Location Services **off**

Android 9 To change location settings:

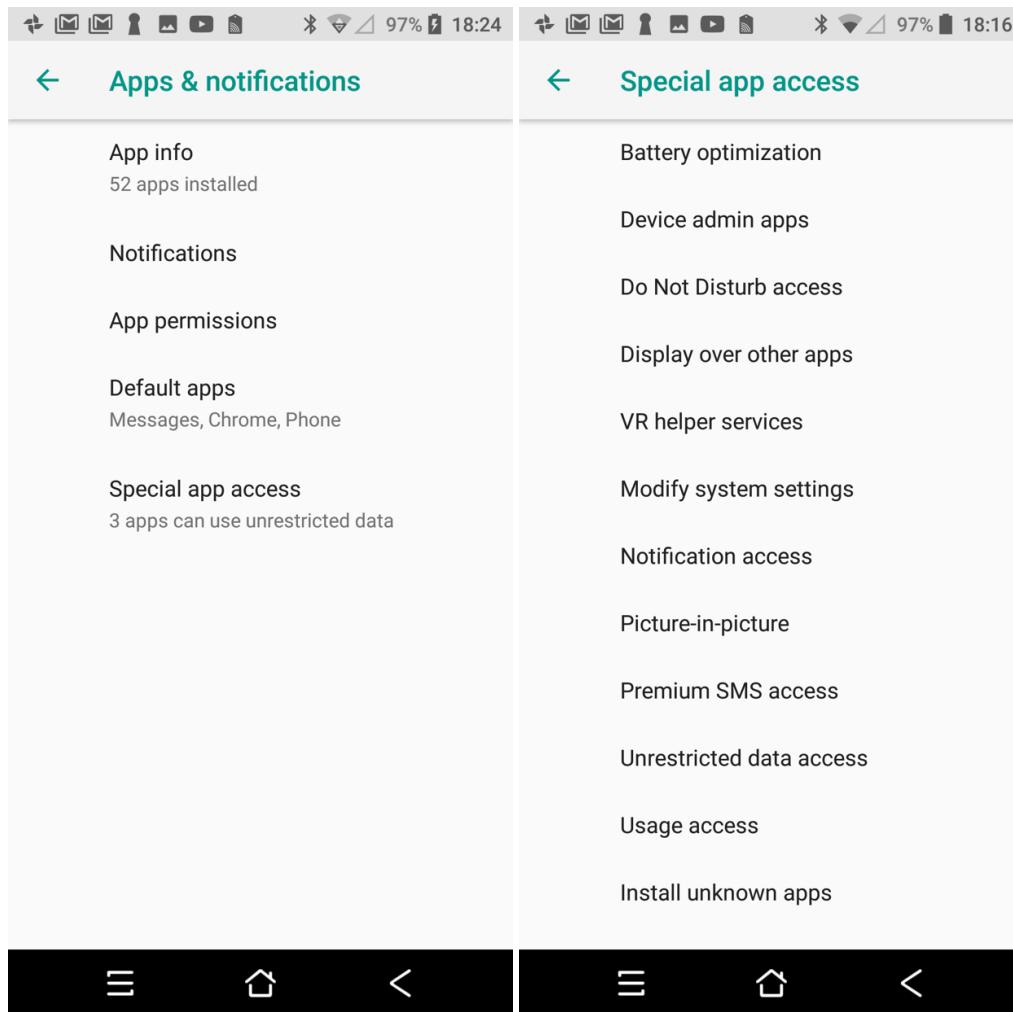
- 1 Open your device's Settings app.
- 2 Tap Security & Location
 - If you have a work profile, tap Advanced.

Then

- Turn Location on. Tap Location.
- Scan for nearby networks: Tap Advanced Scanning. Turn Wi-Fi scanning or Bluetooth scanning **off**.
- Turn emergency location service on or off: Tap Advanced Google Emergency Location Service. Turn Emergency Location Service **off**.

Android 6.0 – 8.1

- 1 Open your phone's Settings app.
- 2 Tap Security & Location. If you don't see "Security & Location," tap Location.
- 3 Tap Mode.
- 4 Then pick: Device only: **Use only GPS**. Don't use Google Location Services to provide location information. This can estimate your phone's location more slowly and use more battery.



- 5 Set the location mode to device only



← Location

On



Mode

Device only

App-level permissions

Scanning

Recent location requests



Google

High battery use



Google Play services

Low battery use



LPPe Service

Low battery use



Maps

Low battery use

← Location mode

High accuracy

Use GPS, Wi-Fi, Bluetooth, or mobile networks to determine location



Battery saving

Use Wi-Fi, Bluetooth, or mobile networks to determine location



Device only

Use GPS to determine location



- Other suggested Android general settings

Display

Brightness level
50%

Sleep

- 15 seconds
- 30 seconds
- 1 minute
- 2 minutes
- 5 minutes
- 10 minutes
- 30 minutes

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Accessibility

Interaction controls

Click after pointer stops moving
Off

Power button ends call

Auto-rotate screen

Touch & hold delay
Short

Audio & on-screen text

Mono audio
Combine channels when playing audio

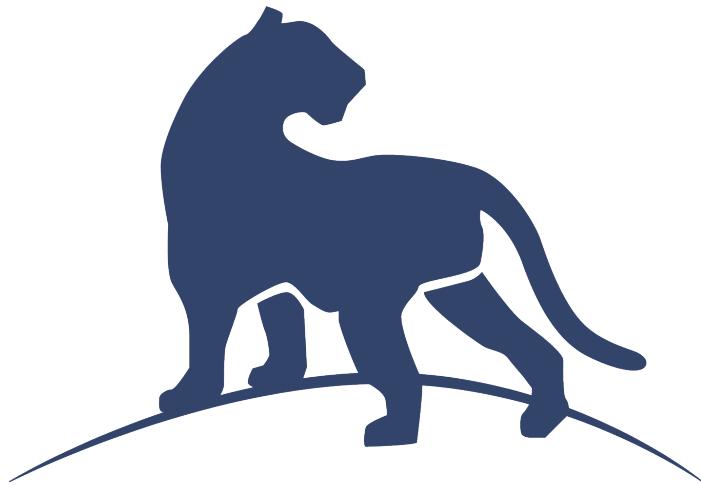
Captions
Off

Experimental

≡ ⌄ <

Sound	
Default notification sound Default	Media volume
Default alarm sound Alarm	Alarm volume
Other sounds and vibrations	
Dial pad tones	<input checked="" type="checkbox"/>
Screen locking sounds	<input checked="" type="checkbox"/>
Charging sounds	<input checked="" type="checkbox"/>
Touch sounds	<input checked="" type="checkbox"/>
Vibrate on tap	<input checked="" type="checkbox"/>
Emergency tone Silent	Do Not Disturb preferences No automatic rules turned on
Sound enhancement	Phone ringtone Blackview
	Default notification sound Default
	Default alarm sound Alarm
Other sounds and vibrations	

SMART Partners



SMART



The SMART Partnership is a group of global conservation agencies, conservation organizations, and individuals that share a mission to conserve biodiversity, reduce the impacts of illegal extraction and trade of natural resources, strengthen law enforcement related to biodiversity conservation and strengthen overall management of conservation areas.

SMART Values

- Freely available and open source
- Responds to needs and feedback from front-line users
- Scalable and customizable to a wide variety of locations and contexts
- Packaged with an extensive support and training network
- Commitment to long-term funding and support through the SMART Partnership

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