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SMART

Technical Training Manual for SMART 3.0

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AFRICA BIODIVERSITY COLLABORATIVE GROUP

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Module 1 – Setting up a Conservation Area

Objective:

In this module, you will work through the creation and setup of a Conservation Area to the point that patrol information can be entered into SMART.

This will include:

- **Starting SMART on your computer for the first time;**
- **Naming and describing the Conservation Area;**
- **Creating user accounts;**
- **Choosing a data model;**
- **Defining spatial boundaries;**
- **Creating a list of stations;**
- **Defining participating organizations and ranks;**
- **Creating employees;**
- **Defining patrol teams, transport types, objectives and mandates.**

Detailed Steps:

Starting the SMART Application for the first time

Installing SMART is easy

- Create a folder called SMART Training 3.0 on your hard disk
- On the USB key: open the folder 'Software Installation'
- Copy the set-up file: smart zip folder on to your computer and unzip
- Copy the entire contents of the folder SMART Training into the folder you created on your hard disk
- In this folder, locate the file called **SMART.exe** (note: Mac computers do not include extensions, such as .exe)
- Right-click on the file.exe and select '**Create a shortcut'**
- Copy and paste the shortcut link **(SMART.ink)** onto your desktop
- Double-click on the shortcut to launch the SMART application

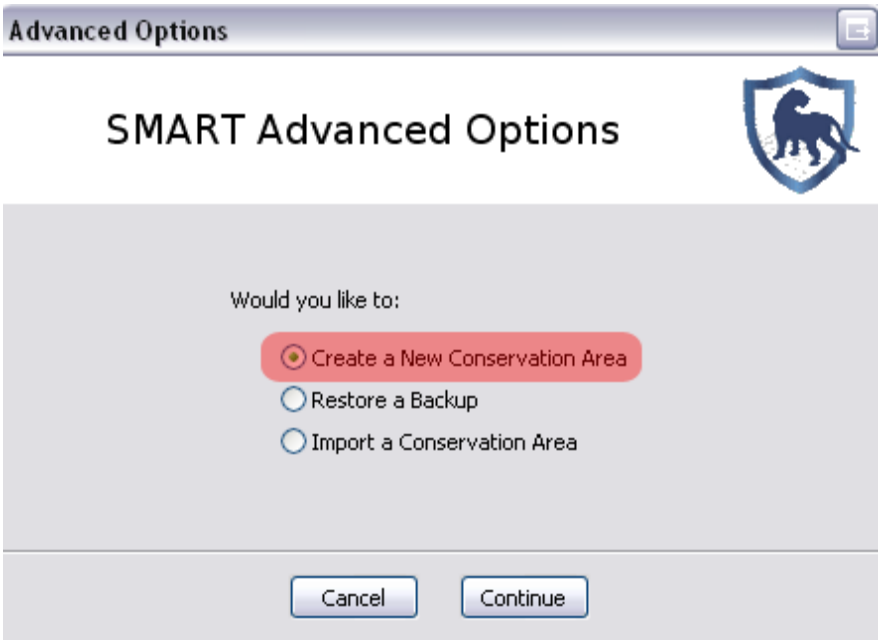
Note: *prior to starting the training, make sure you downloaded all of the necessary support files.*

Create a new Conservation Area

SMART has the ability to manage multiple Conservation Areas (or protected areas) within a single database. You will start with an empty database and you will create a new conservation area.

- Launch the SMART application by double-clicking on the shortcut on the desktop

- Select **Advanced**

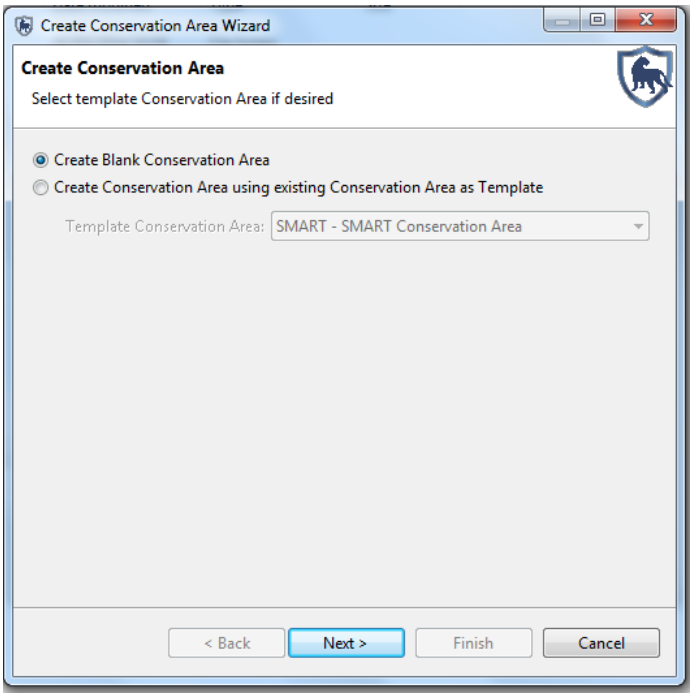


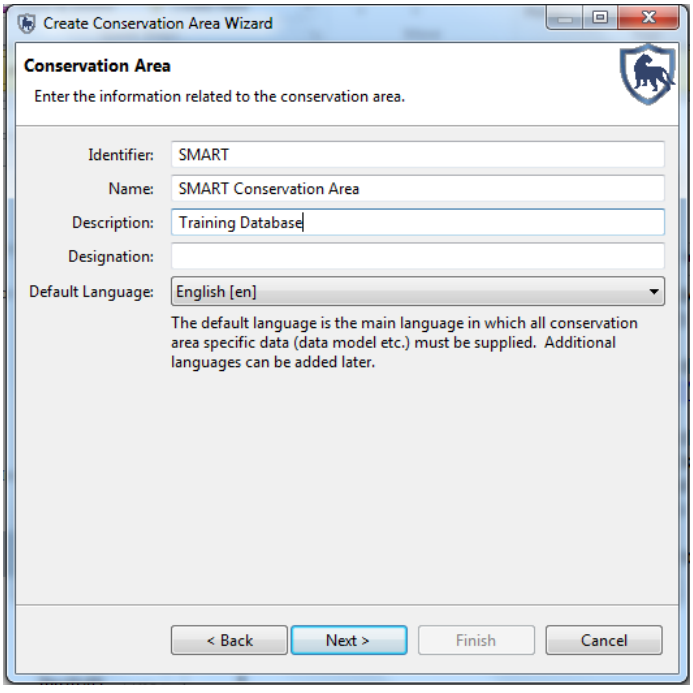
- Select **Create a New Conservation Area**
- Click **Continue**

***Note**: if SMART contains no databases, then SMART automatically opens at this page.*

Conservation Area Properties

The Conservation Area properties are names and descriptors assigned to a specific Conservation Area. These properties can help users of the SMART software manage multiple conservation areas.





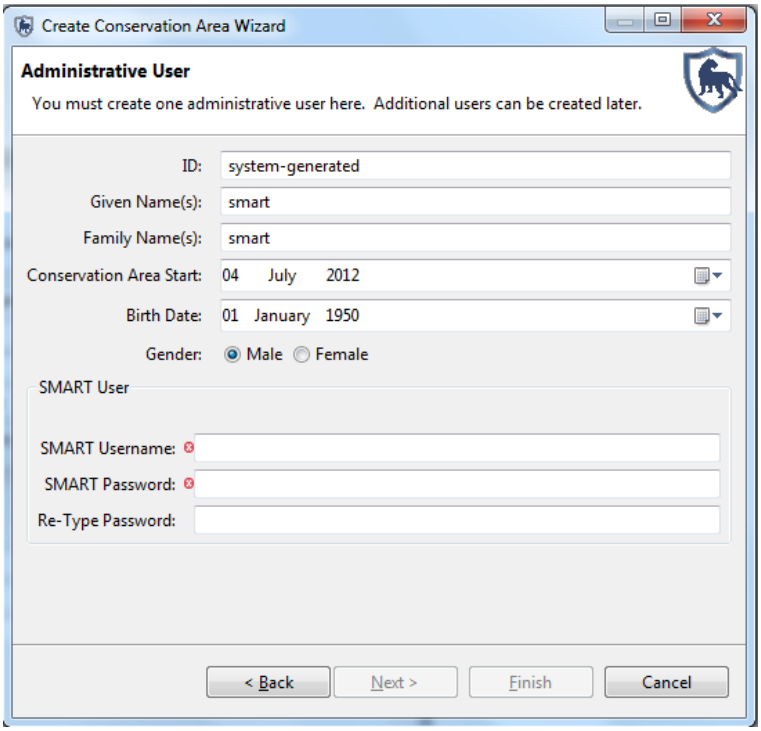
- Check that **Create Blank Conservation Area** is selected

- Click **Next**
- Enter in the following information:
    - Identifier: **SMART**
    - Name: **SMART Conservation Area**
    - Description: **Training Database**
    - Default Language: **English (en)**
- Click **Next**

***Note**: Properties of the Conservation Area may also be modified later on, after initial Conservation Area creation.*

Defining an Administrative User

Creating an account for the primary administrator of a newly created Conservation Area is required, and the fields will need to be populated before the software will advance. After completing the form, the primary administrator's account will be created and can be used to make any changes within the newly defined Conservation Area.

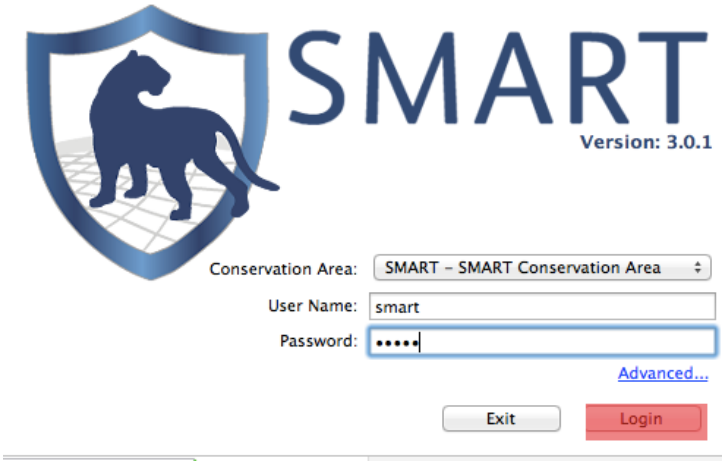


- Enter in the following information:
    - Given Name(s): **smart**
    - Family Name(s): **smart**
    - Conservation Area Start: **04 July 2012**
    - Birth Date: **Leave as default**
    - Gender: **Leave as default**

***Note**: The ID field is automatically populated but will accept entered values if an employee has an existing ID.*

- Under the SMART User section enter the following information:
    - SMART Username: **smart**
    - SMART Password: **smart**
    - Re-Type Password: **smart**
- Click **Finish**

***Note**: After creating the primary administrator account the application will restart and bring you back to the initial start screen.*



- Enter in the log in information:
    - Conservation Area: **SMART - SMART Conservation Area**
    - User Name: **smart**
    - Password: **smart**
- Click **Login**

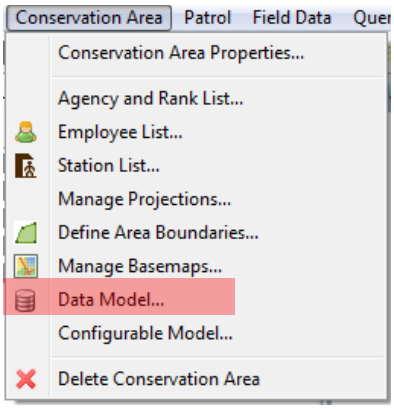
Defining a Data Model

Upon initialization of a new Conservation Area, the primary administrator will need to define the data model to be used for the new Conservation Area.

This process can be accomplished by:

- Using the default data model[1];
- Start with a blank data model;
- Copying from an existing Conservation Area that has been previously initialized by that instance of SMART (*you will only see this option if there is an existing conservation area in your database)*; or,
- Importing a custom data model (if a previously exported XML data model file exists).

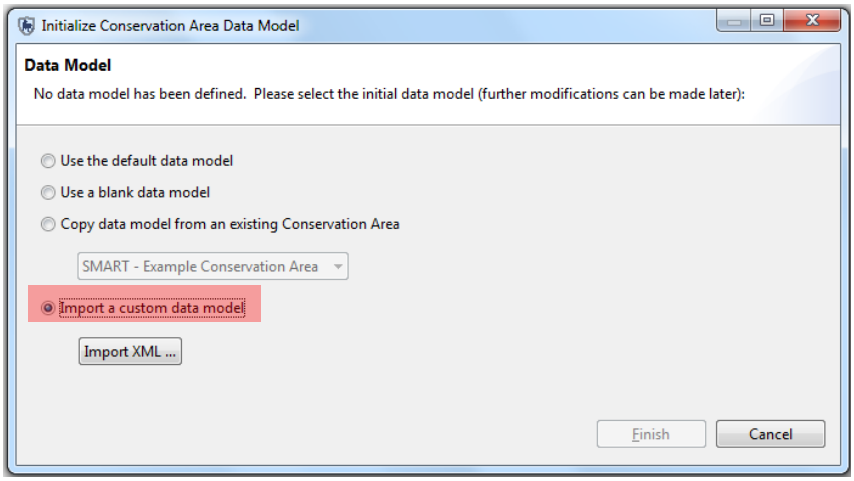
[1] The default data model was developed by the SMART Partnership and represents best practices. If you are setting up SMART for the first time then we recommend you start with this model as a guide.



In the menu bar …

- Click **Conservation Area … Data Model …**

For this exercise you will import a custom data model.



- Select **Import a custom data model**
- Click **Import XML ...**
- In the **Module 1** folder on your USB key select **datamodel.xml**
- Click **Open**
- Click **Finish**
- After the data model has finished loading click **Close**

***Note**: For further information on editing, modifying, importing/exporting and other elements of data models please refer to Module 6 - Data Model Management.*

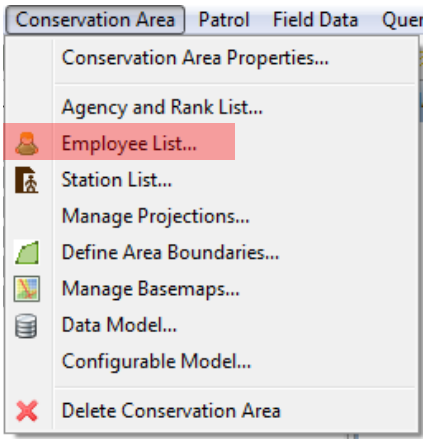
The Conservation Area now has a name and descriptors, a primary administrator and a data model but more work is needed to prepare it before patrol information can be entered.

Entering Agencies and Ranks

Employees working within a Conservation Area, and SMART users, may belong to a particular agency, and may have a rank within that agency.

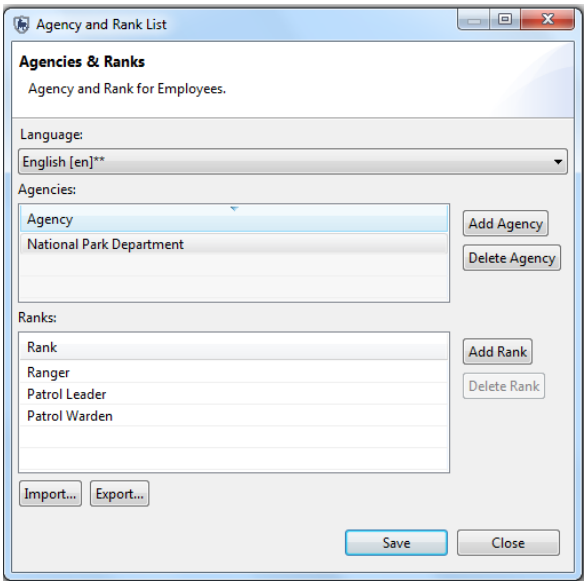
As part of the initial setup of a Conservation Area, the list of Agencies and their associated Ranks is accessed through the menu “Conservation Area - Agency and Rank List …”

Note: Agencies are defined first because Ranks are always associated with an Agency. Be careful to enter the agency names exactly as given below as we will be using them later!



In the menu bar …

- Click **Conservation Area … Agency and Rank List**

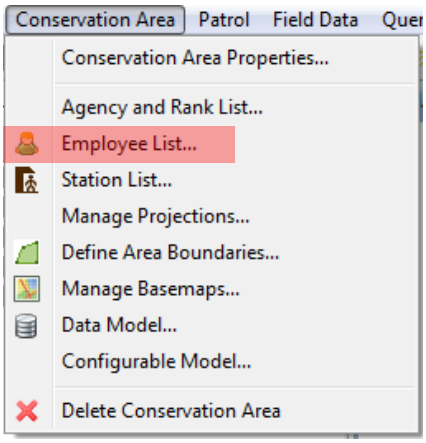


- Click **Add Agency**
- Double-click on **New Agency**
- Enter **National Park Department**
- Click **Add Rank**

- Double-click on **New Rank**
- Enter **Ranger**
- Click two more times on **Add Rank**
- Replace New Rank with **Patrol Leader and Patrol Warden**
- Click **Save**
- **Close**

***Note**: All entries can be edited by double-clicking on the name and retyping in new values. Agencies and Ranks can be deleted by clicking the Delete Agency or Delete Rank button. Additionally, there is an option to import and export, which is useful when creating a new conservation area that uses the same set up.*

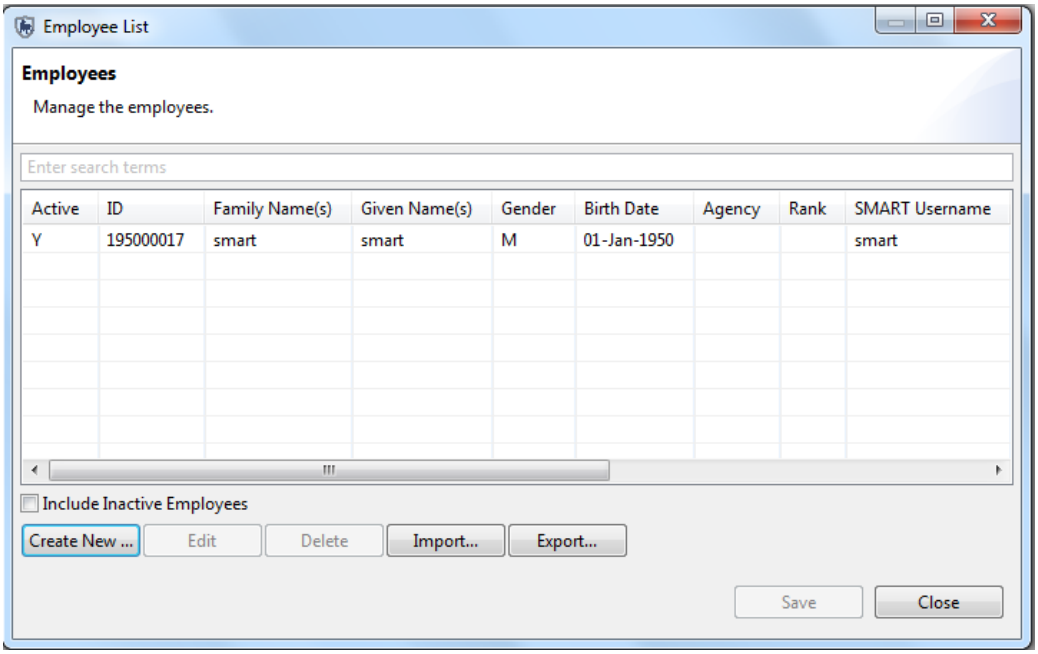
Entering Conservation Area Employees



In the menu bar …

- Click **Conservation Area … Employee List**

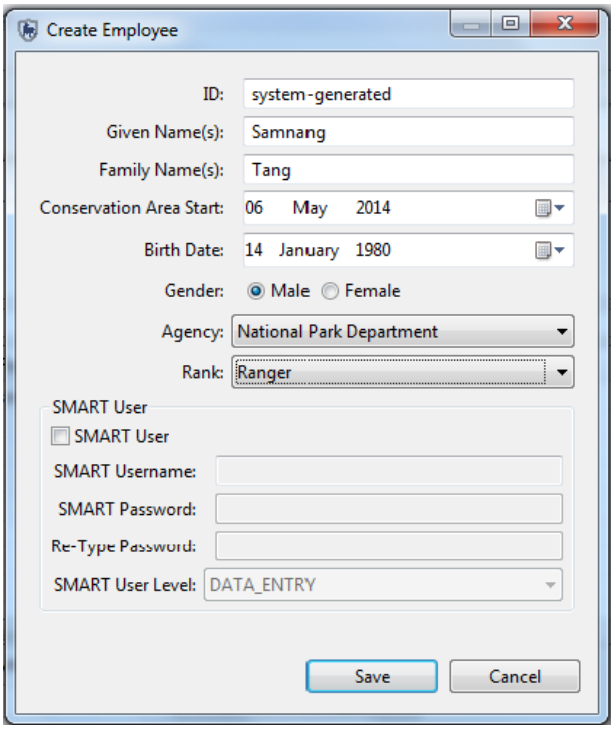
The current Employee List contains the single administrator account that was created during the initialization of the Conservation Area. Additional employees of a Conservation Area can be entered individually, or through a bulk upload process.



The "Create New ..." button will bring up the same form that was previously used to create the primary administrator's account. New employees can be entered into the system using this form.

- Click **Create New ...**

Enter in the following employee information

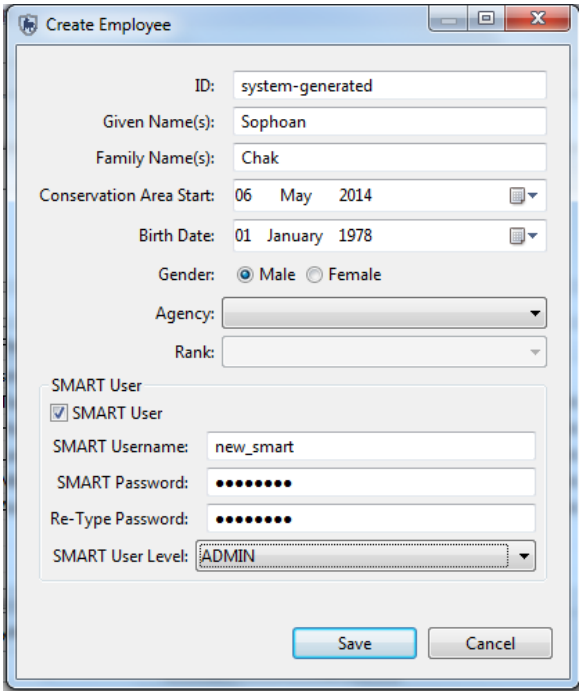


- Given name(s): **Choose the name of a ranger from your site**
- Family name(s): **Choose a name**
- Conservation Area Start: **<today's date>**
- Birth Date: **<choose a date>**
- Gender: **<choose one>**
- Agency : **National Park Department**
- Rank : **Ranger**
- **Save**
- **Repeat these steps to add another 2 rangers, a patrol leader and a patrol warden.**
- **Close**

Create an account for a new SMART user

To add a new SMART User, you also click on **'Create New'**

- Click **Create New and enter your own employee details**
- Click the **SMART User** box



- Under the SMART User section enter the following information:
  - SMART User Name: **Select a name**
  - SMART Password: **Select a password**
  - Re-Type Password
  - Choose Smart User Level: **ADMIN**
  - Click **Save**

Importing Employees

The second method of populating the list of employees for a Conservation Area is to import an existing employee list.

The “Import...” function will import a CSV file and auto-populate the Employees List.

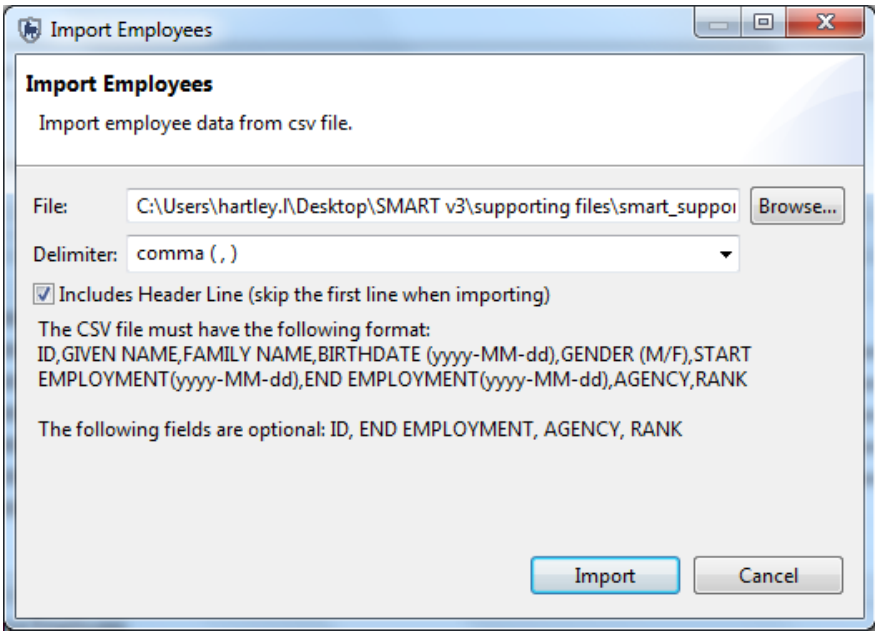
The CSV file must have the following format:

ID,GIVEN NAME,FAMILY NAME,BIRTHDATE(yyyy-mm-dd),GENDER(M/F),
START EMPLOYMENT(yyyy-mm-dd),END EMPLOYMENT(yyyy-mm-dd), AGENCY, RANK

***Note**: If the Agencies and Ranks data has not yet been populated, then it will not be possible to assign an Agency or Rank to that employee at this point.*

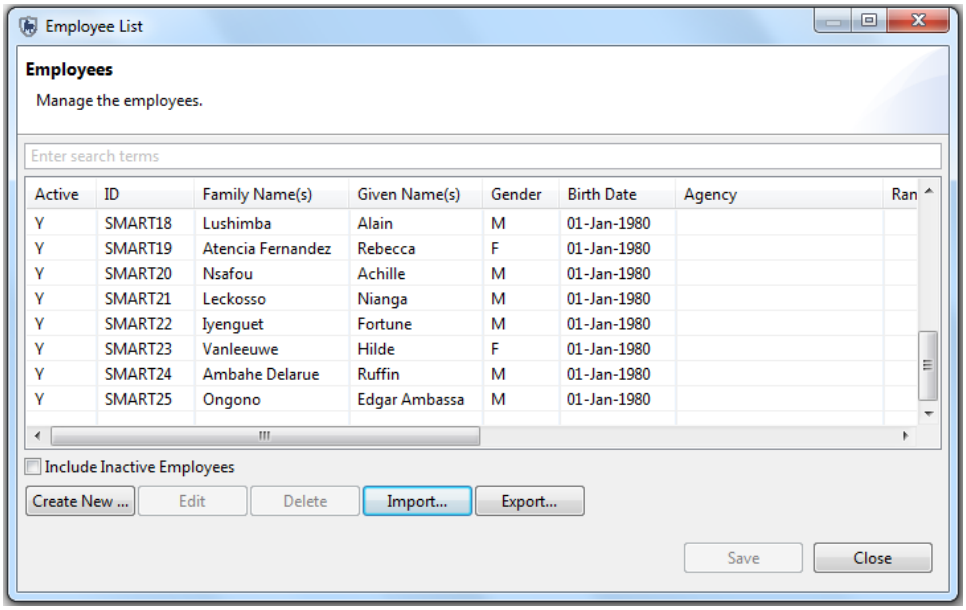
If the employee is also a user of the SMART software, the form will allow for the creation of a SMART account. The parameters for a username, password and account privileges are entered in at this point. Edits to employee details or SMART account settings can be done at any point but must be done via an administrator account.

- On the list of employees, click **Import ...**



- Check **Includes Header Line (skip the first line when importing)**
- Click **Browse**
- In the Module 1 folder select **Employees.csv**
- Click **Open**
- Click **Import**
- Click **OK**
- Click **Close**

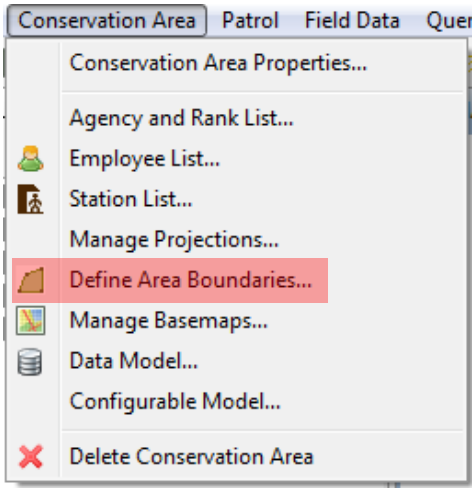
After the import you should have all of the new employees entered into the database for this Conservation Area.



Defining Conservation Area Boundaries

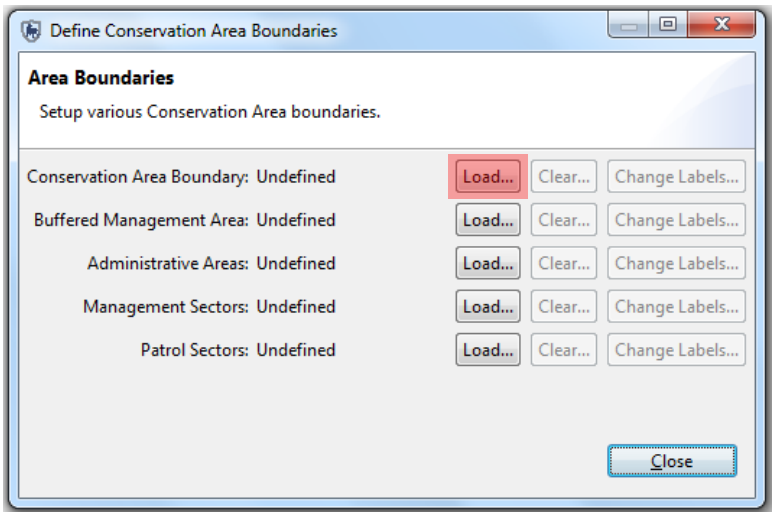
The next step in initializing a Conservation Area is to define the spatial boundaries. This is accomplished by uploading ESRI Shapefiles for the five (5) administrative divisions.

***Note**: Shapefiles are required to have an ESRI projection file (*.prj)*



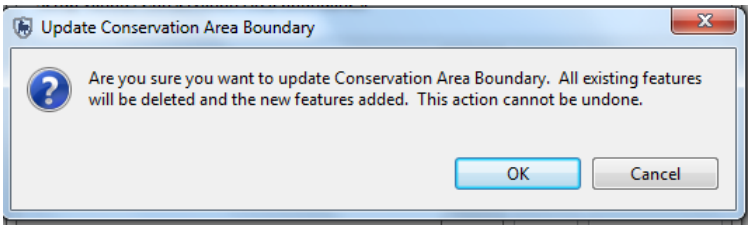
In the menu bar …

- Click **Conservation Area … Define Area Boundaries**



- Click corresponding **Load** button beside Conservation Area Boundary to begin the load process

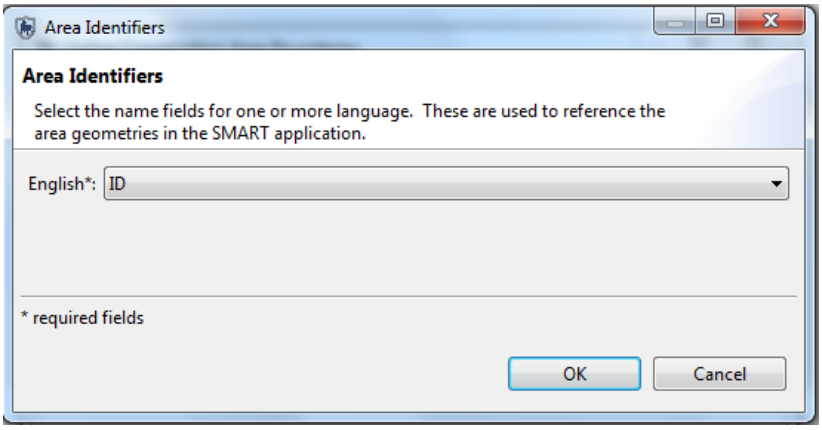
***Note**: Not all five different zones will apply to all conservation areas.*



***Note**: For the initial load of boundaries there are no features that will be overwritten. On future uses of this feature, the previously loaded boundaries will be replaced with the new selections.*

- Click **OK**
- In the **Module 1\Boundaries** folder select **CA.shp**
- Click **Open**

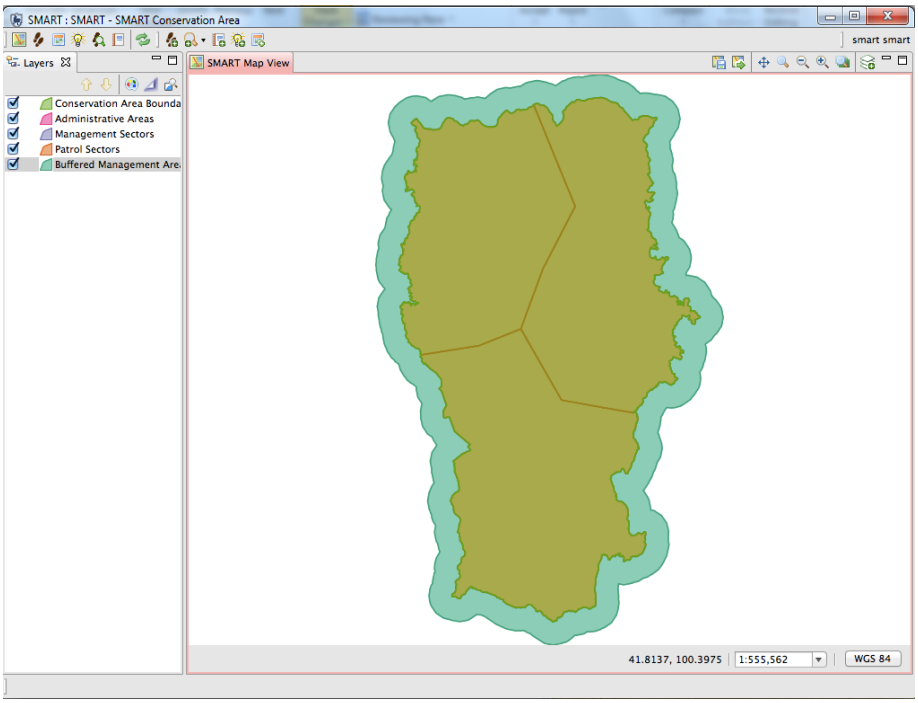
As part of the definition process, the user is required to select an identifier field that will be used for display and querying purposes.



- Under English select **Name** (*Note: this should be the attribute field with the name of the Conservation Area in the loaded shapefile)*
- Click **OK**
- Repeat the process for the remaining two boundary types for this particular Conservation Area
    - Buffered Management Area = **CA_BUFF.shp**
        - Area identifier **= BUFFERIDS**
    - Patrol Sectors = **PS.shp**
        - Area identifier **= Zone**

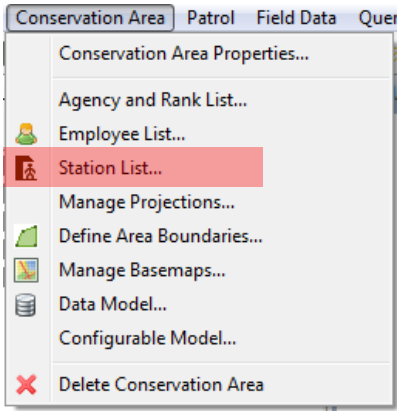
- Press **Close**

Note*: If you don't immediately see the map layers in the window then click on the Zoom to Full Map Extent icon in the top right hand corner of the map window* 



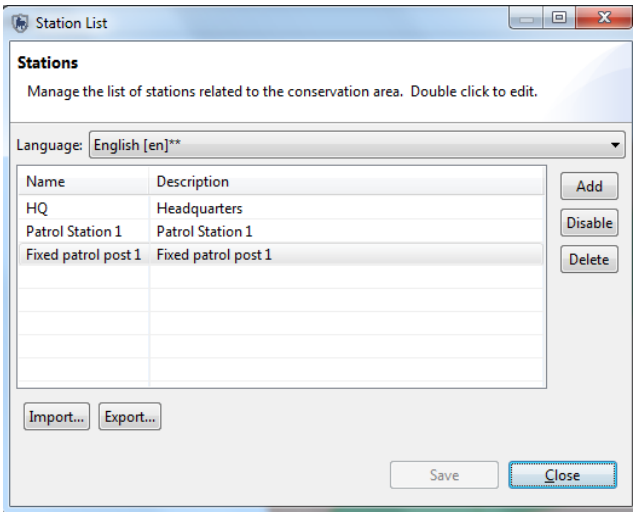
Entering Stations

Another part of the initialization process is defining the list of stations that are used by employees to start their patrols.



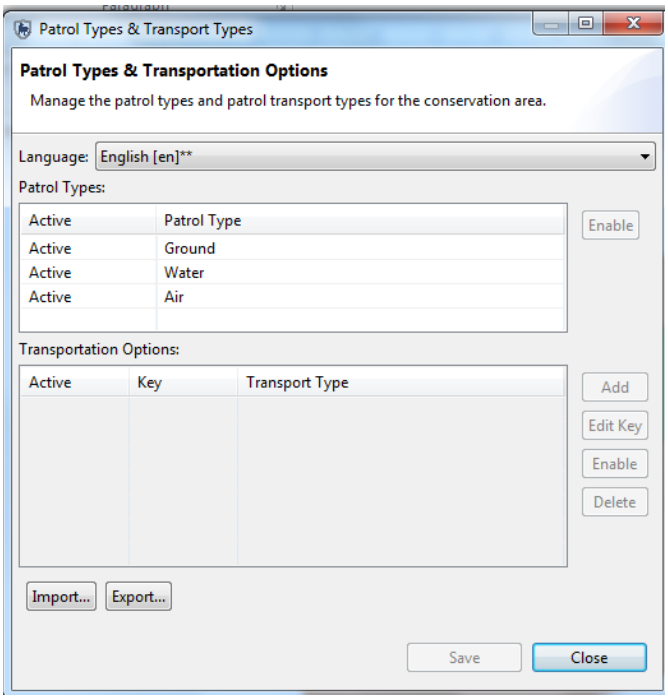
In the menu bar …

- Click **Conservation Area … Station List**
- Click **Add**
- Double click to change **New Station** to **HQ**
- Click in the Description cell for **HQ**
- Type in **Headquarters**
- Add **two** more Stations using the same process:
- **Name - Description**
    - **Patrol Station 1**
    - **Fixed patrol post 1**
- **Save and Close**



Defining Patrol Types

Patrol Types help define the mode of transportation used for the patrols. The Patrol Types are defaulted to Air, Ground and Water. The subtypes or "Transportation Options" define the various forms of transportation used for each of the three Patrol Types. The "Add" button will allow administrative users to add new Transportation Options for the three Patrol Types of Air, Ground and Water.

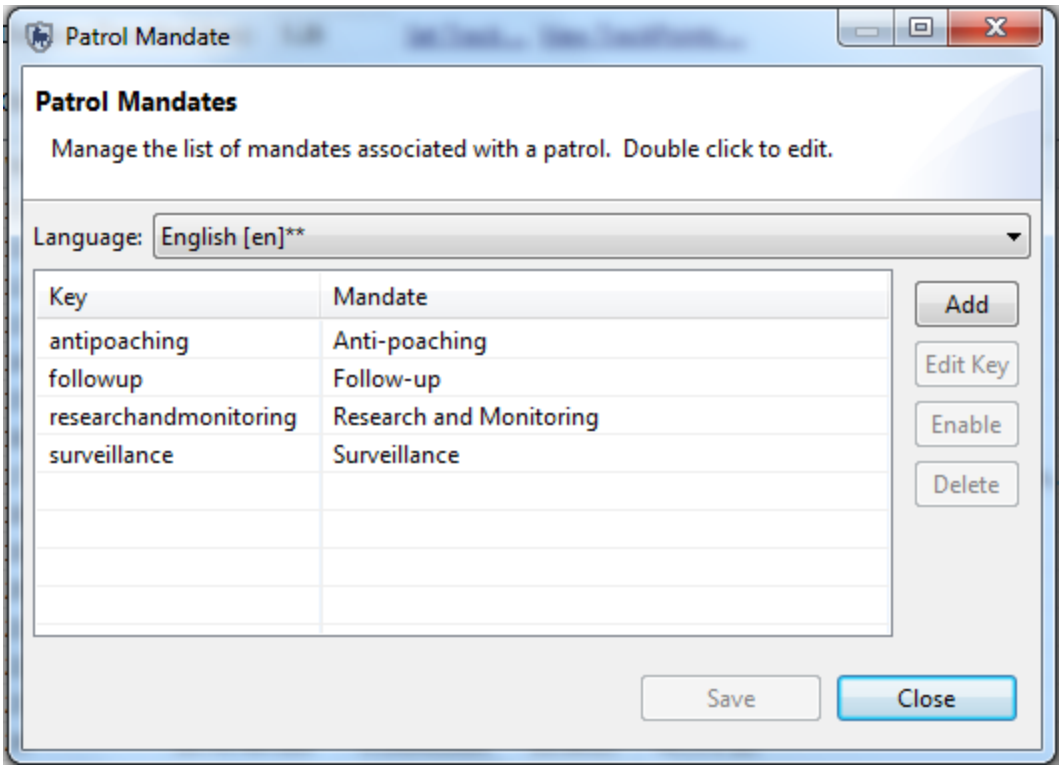


- Click **Patrol … Patrol Types** from the Main Menu Bar
- Select Patrol Type **Ground**
- Click the **Add** button
- Select the **New Transport Type**.
- Type in **Foot**
- Click the **Add** button to add another entry to Ground Patrols
- Type in **Vehicle**
- Click **Save**
- Click **Close**

Note: You can Disable and Enable patrol and transport types in order to simplify the process of creating a patrol e.g. a conservation area may never run water patrols therefore this option can be disabled.

Defining Patrol Mandates

Patrol Mandates state the general objective of a patrol and require the administrator to define the entries. These are assigned to each patrol in order to categorize patrols according to their objective, which will facilitate analysis by patrol objective.



- Click **Patrol … Patrol Mandates** from the main Menu Bar. *Note: the Key will be automatically generated.*
- Click the **Add** button
- Select the **New Patrol Mandate**.
- Type in **Surveillance**
- Add **3** more Mandates
    - **Anti-poaching**
    - **Follow-up**
    - **Research and Monitoring**
- Click **Save**
- Click **Close**

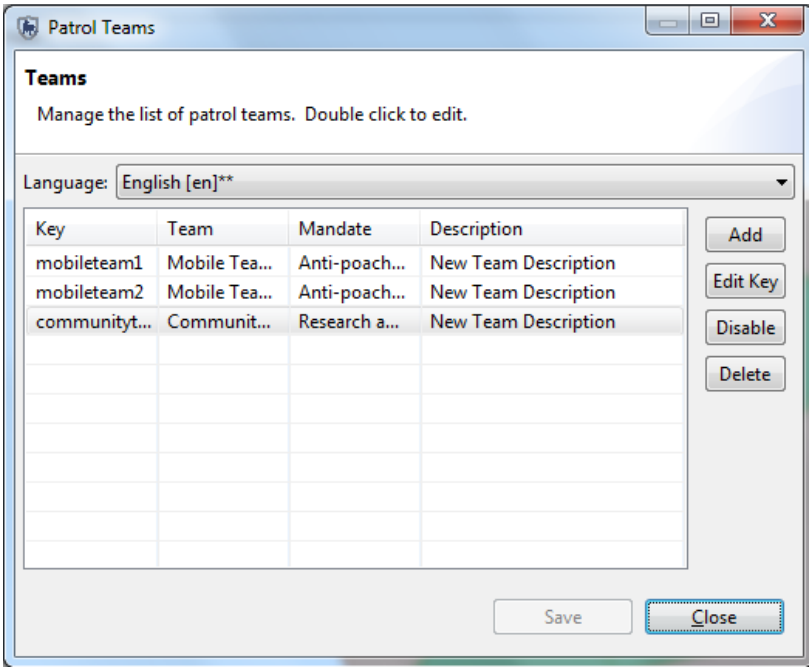
Defining Patrol Teams

Patrol Teams state the specialty of the team, or the name of the team. Patrol Teams are assigned to each patrol in order to categorize them according to their specialty or team name.

To create a new patrol team:

- Click **Patrol … Patrol Teams** from the main Menu Bar
- Click **Add**
- Click the **New Team** entry and type in **Mobile Team 1**
- Select the Mandate **Anti-poaching** by double-clicking on the Mandate field
- Click **Add**
- Click the **New Team** entry and enter **Mobile Team 2**
- Select the Mandate **Anti-poaching**
- Click **Add**

- Click the **New Team** entry and enter **Community Team 1**
- Select the Mandate **Research and Monitoring**
- Click **Save**
- Click **Close**



Managing Patrol Options

Managing Patrol Options allows the Administrator to specify a time period (in days) for how long after a Patrol was entered that the users can edit the Patrol information. -1 indicates that there is no time limit for editing patrols - they may always be edited.

Another parameter on this screen, is whether to collect distance and direction information. For example, a Conservation Area manager may wish to have rangers record an observation that was seen, say, “500 metres to the North-East”.

For the purposes of this training module you will leave the default settings.

<End of Module 1 - Configuring a Conservation Area>

Module 2 – Map navigation and GIS

Objective:

This Module will instruct you on how to use SMART's mapping features. You will learn how to create custom maps, export maps, set Basemaps and access attribute information directly from the mapping windows.

- **Icons and navigation**
- **Adding datasets**
- **Styling and labeling**
- **Exporting data**
- **Setting map projections**
- **Setting basemaps**
- **Adding new layers**
- **Adding map legends**

Detailed Steps:

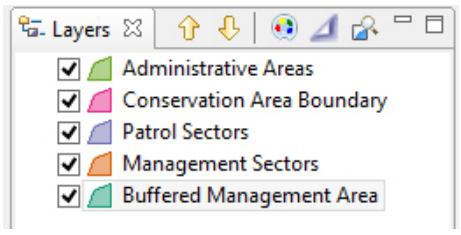
Embedded in SMART in the Mapping, Patrol and Query perspectives are the mapping features that allow for the visualization of the spatial data used to manage the Conservation Area. Boundaries, GPS waypoints and observations, query results and other spatial data sets are all easily viewed within SMART's mapping framework.

- Click the **Map Perspective** icon

The Map Perspective contains two main sections. On the right is the mapping window called SMART Map View and on the left are the boundary layers that were loaded into the Conservation Area in Module 1.

Icons and Navigation

Upon logging into the application as an administrator SMART will open the Map Perspective window. The five previously loaded administrative layers in the 'Layers' tab, which can be found on the left side of the screen, will be displayed in this window *(remember only 3 were loaded)*. The icons above the layers list allow for reordering, restyling and zooming to the extents of the layers.

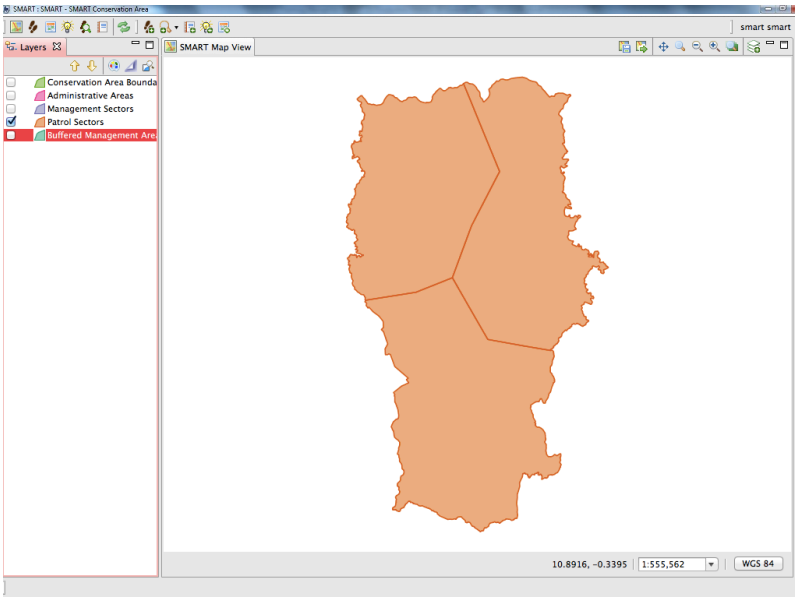


	Moves the selected layer up
	Moves the selected layer down
	Changes the style of the selected layer
	Toggles whether the selected layer should be focused or not
	Zooms to selected layers

- Turn layers **off/on** by clicking the checkbox next to a layer
- Move layers **up/down** by using the arrows or by dragging the layer
- Select Conservation Area Boundary and click **Zoom to selected layers** icon

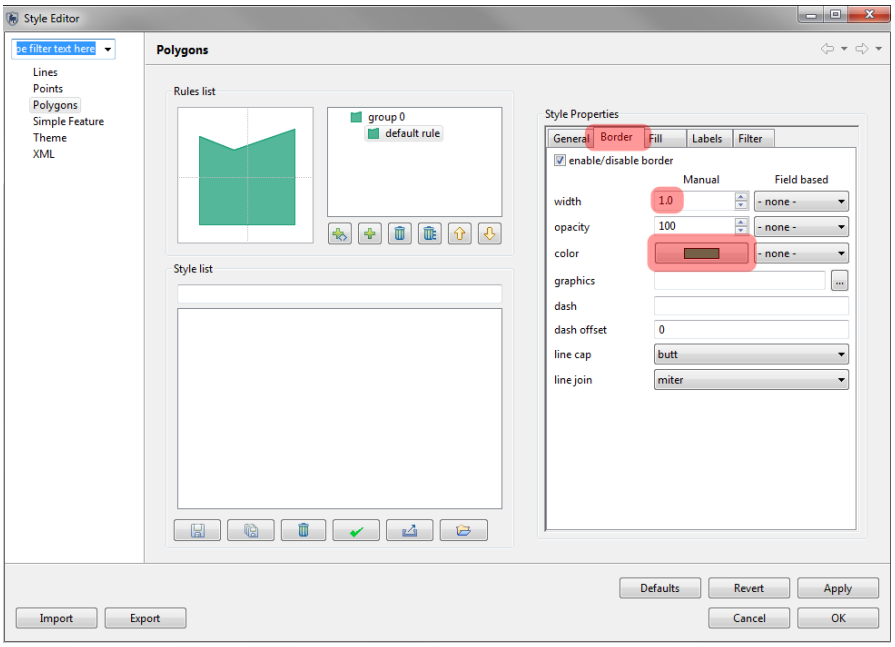
Changing Styling

SMART has an extensive tool set for creating custom maps with user-defined colors and labels.

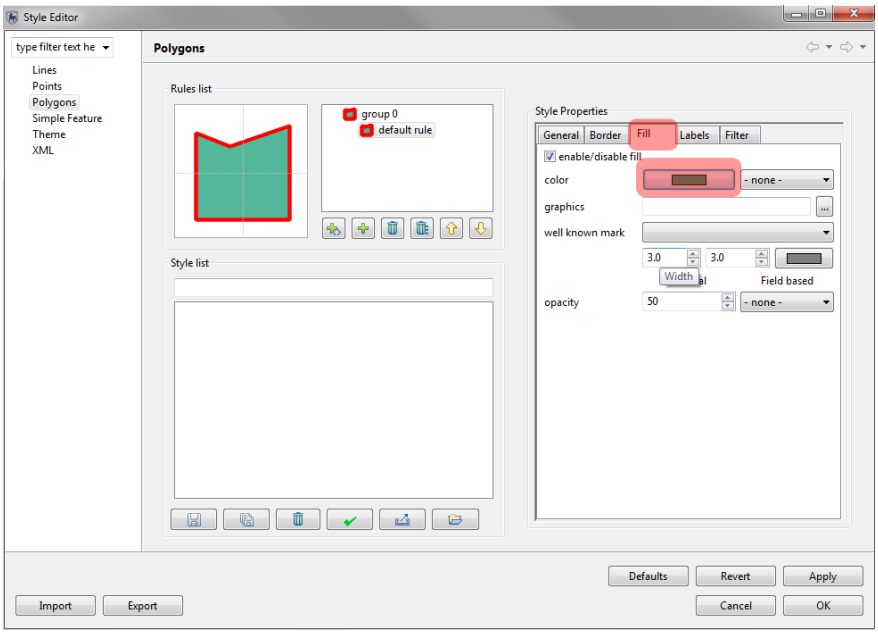


- Select only the **Patrol Sectors** layer in the map legend
- Click the style icon above the map legend on the left hand side or right click the patrol sections layer and select **Change Style** from the list 

The Style Editor dialog box will appear. There are many styling features that are available but for this exercise you will adjust the border fill color, line size and create a label for the feature.

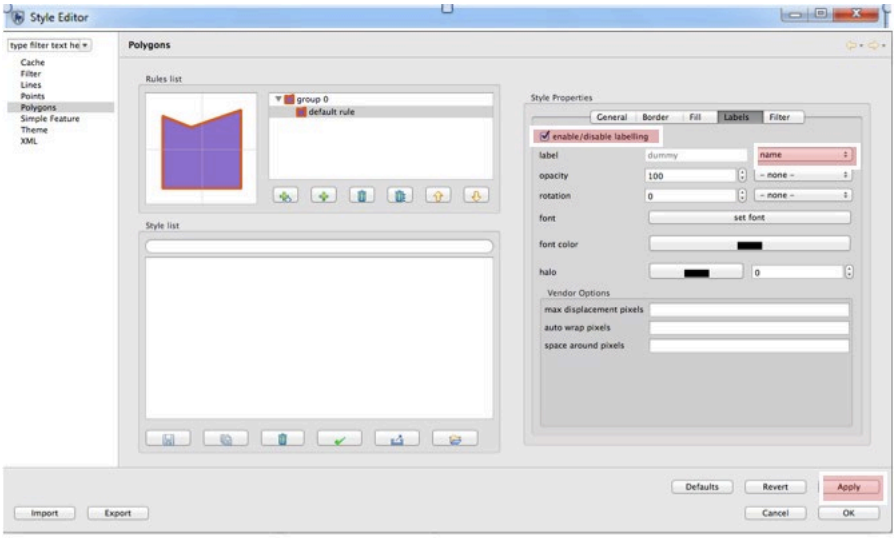


- Click the tab **Border**
- Click **color** to open the color selector
- Select the color **you want**
- Click **OK**
- Set the width to **3.0**



- Click the tab **Fill**

- Click **color** to open the color selector
- Select the color **you want**
- Click **OK**



- Click the tab **Labels**
- Click **enable/disable labeling** to activate labeling
- In the pull down of label select **name**
- Click **Apply**
- Click **OK**
- The map will now display your chosen color, border, and labels.

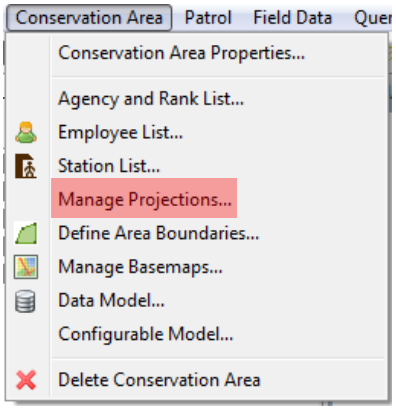
Setting Map Projections

SMART uses geographic coordinates and WGS84 as default (i.e. decimal degrees). If you want to load spatial boundaries in a different projection and/or datum (e.g. UTM and/or WGS 1972) you can set this manually.

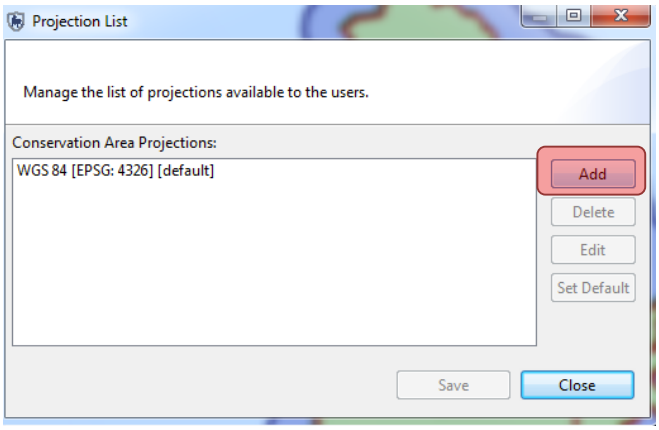
	Saves the current map as a Basemap
	Selects a saved Basemap
	Pans/moves the map
	Zooms the map in
	Zooms to the full extent of all layers

	Adds data layers to the map

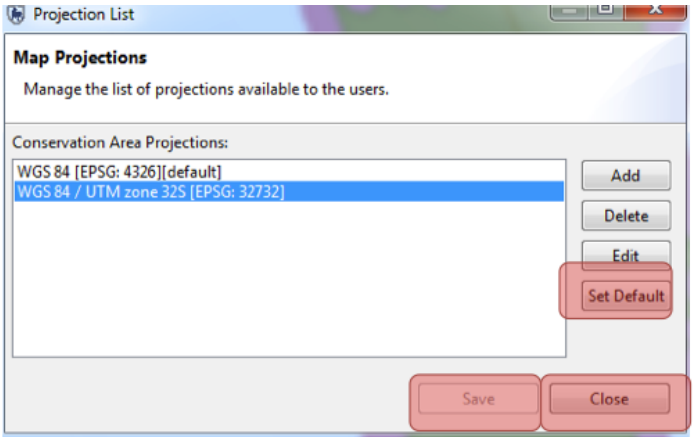
- Go to **Conservation Area menu … Manage Projections**

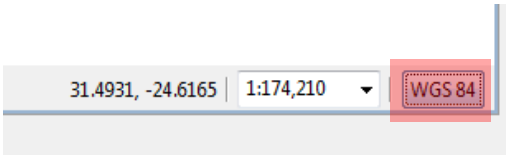


- You will see the default projection. Click **Add**

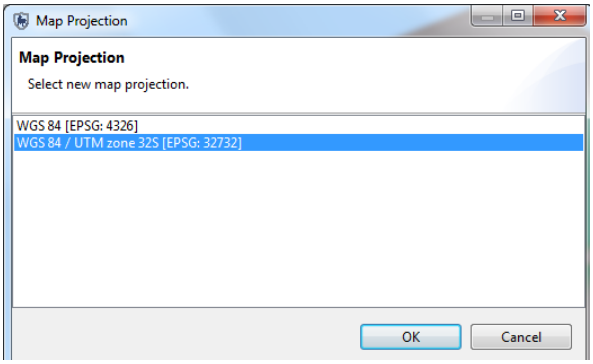


- Select **WGS 84/UTM Zone 32S**
- Click Ok
- Click **Set default**
- Save and Close



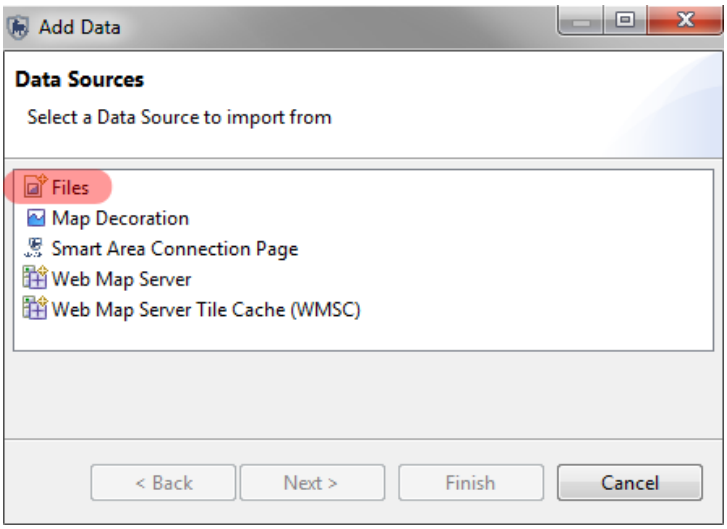


- In the bottom right hand corner of the map window, click the projection and select the default option
- You should then see your map coordinates displayed in UTM

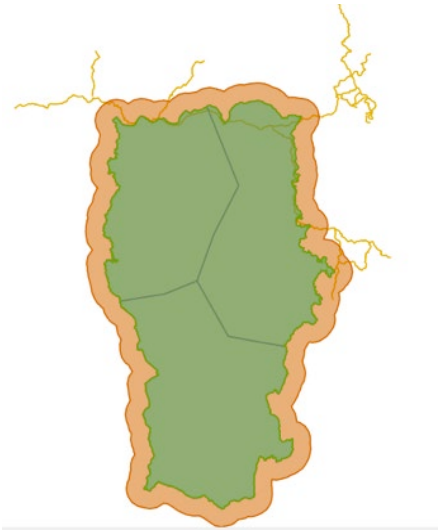


Add new layers

- In the top right corner of the map, click on the **Add layer** icon 



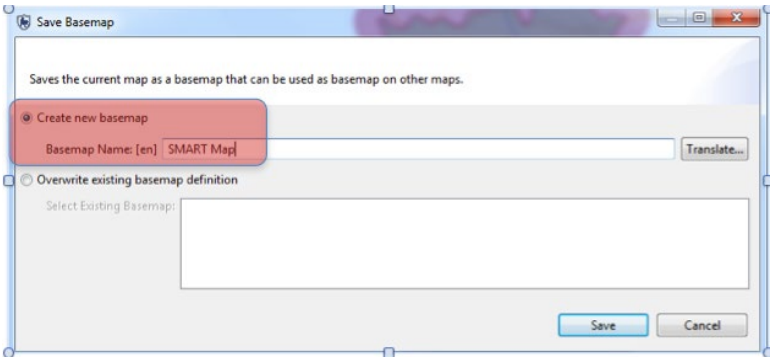
- Select **Files**
- Open **Module 2** on your USB
- Select the file **Road.shp**
- Click **Open**



Save a Basemap

In the SMART Map View you will see the boundary files that are associated with the Conservation Area. In the upper right of the SMART Map View window are the map navigation icons.

- To save your first Basemap click the **save as basemap** Icon 

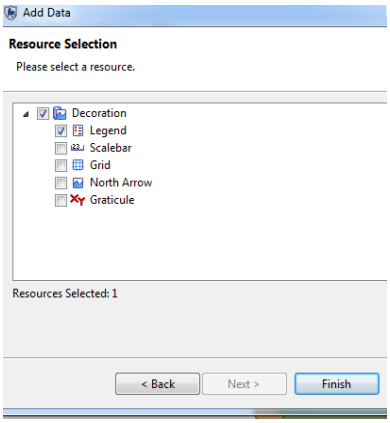


- Select **Create new Basemap**
- Enter **SMART Map**
- Click **Save**
- Click **OK** once saved

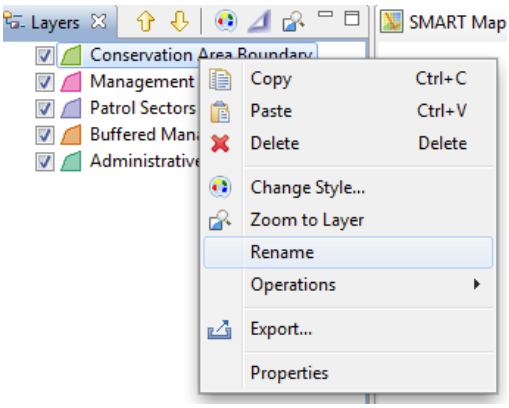
Add a Basemap legend

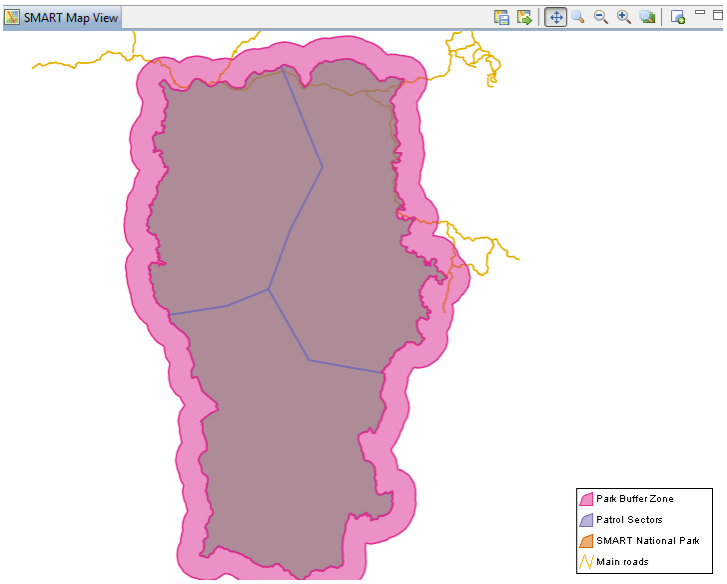
Map decoration can be added to the maps (including legends, scalebars etc) to make them easier to interpret.

- Click on **add a layer to the map** 
- Select **Map Decoration**
- Click **Next**
- Check **Legend**
- **Finish**

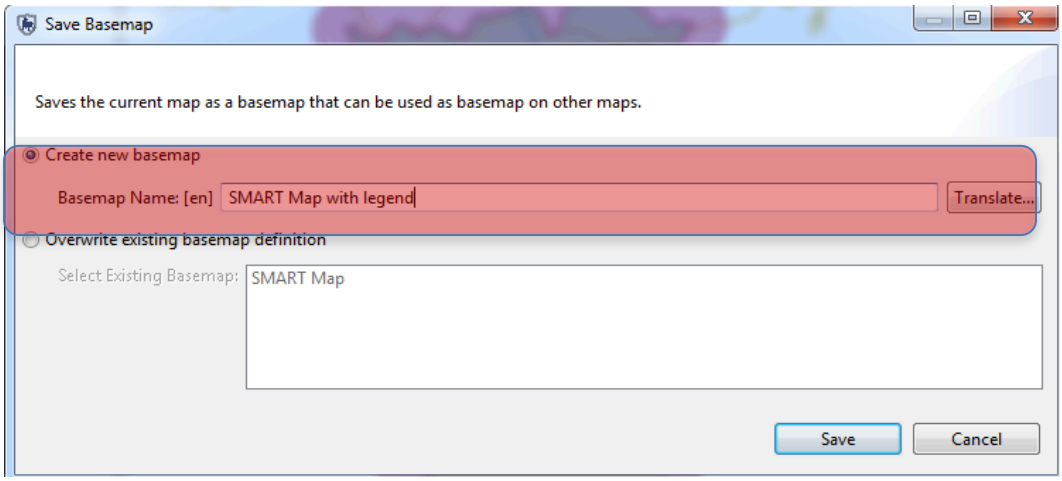


- Deselect all map layers *EXCEPT* **Conservation Area Boundary, Buffered Management Area, Patrol Sectors and Roads** (*Note: map layers can be found in the 'Layers' tab on the left*)
    - Rename the map layers by right-clicking on the map layer name:
        - Conservation Area Boundary = **SMART National Park**
        - Buffered Management Area = **Park buffer zone**
        - Patrol Sectors = **Patrol Sectors**
        - Roads = **Main roads**





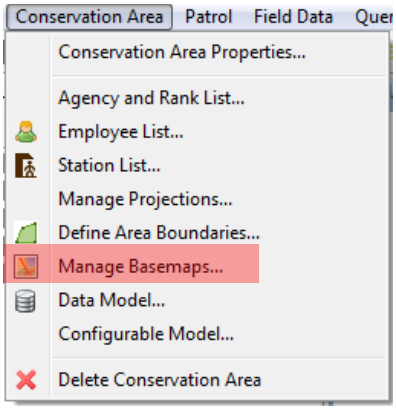
- Now the Basemap has been changed, click again on the save as basemap icon 
- Create a new map called: **SMART Map with legend**. *Note: it is helpful to move the legend to the top of the list of shapefiles, so it is easily accessible and first*.



- **Save**
- Click **OK** once saved

Setting a Saved Basemap

After a Basemap has been saved it can be set as the default for the entire session.



- From the menu bar select **Conservation Area … Manage Basemaps**
- Select **SMART Map**
- Click **Set as Default**
- Click **Save**
- Click **Close**

<End of Module 2 – Map Navigation and GIS>

Module 3 - Patrols

Objective:

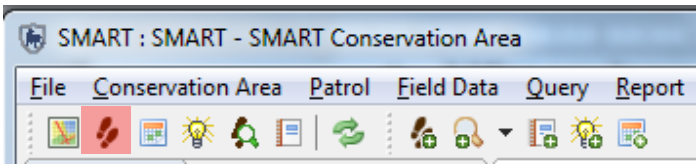
In this module you will work through the process of creating patrols in SMART. The goal of the module is to let you become familiar with creating, editing, and managing patrol data.

- You will be working to understand the following features in this module:
    - **Creating a new patrol**
    - **Downloading waypoints**
    - **Downloading or generating tracklogs**
    - **Data entry**
    - **Viewing a patrol map**
    - **Multi-leg patrols**
    - **Exporting and importing patrols**
    - **Patrol filters**

Detailed Steps:

Patrol Perspective

The SMART application allows the user to switch between perspectives. In this module you will explore options within the Patrol Perspective.

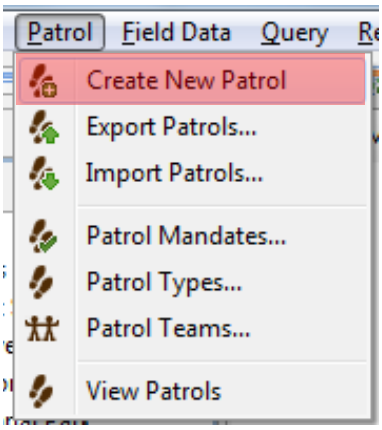


- Click the **Patrol Perspective Icon**, highlighted above in red

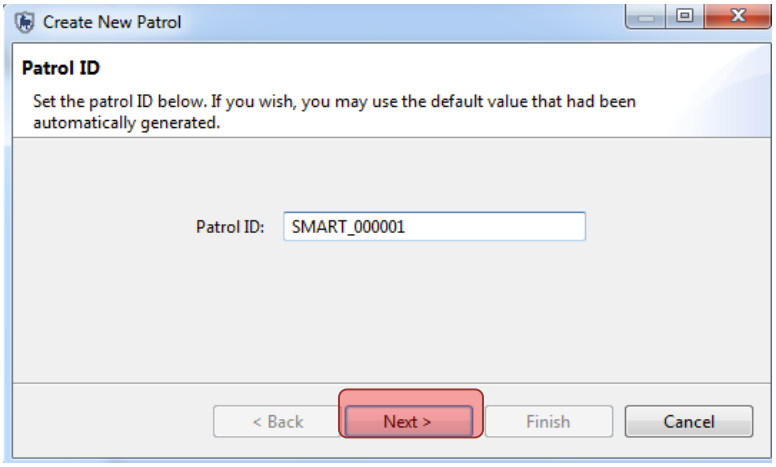
Entering Patrol Data using GPS and Tracklogs

You will see that in the Patrol List View there are no patrols currently listed.

- To create a patrol click on the Patrol menu item **Create New Patrol**

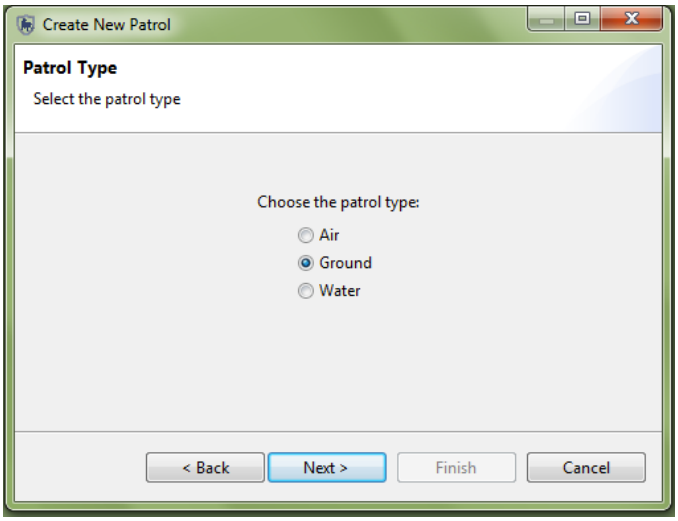


The Patrol ID will be automatically populated with unique values unless the user enters a new ID manually.



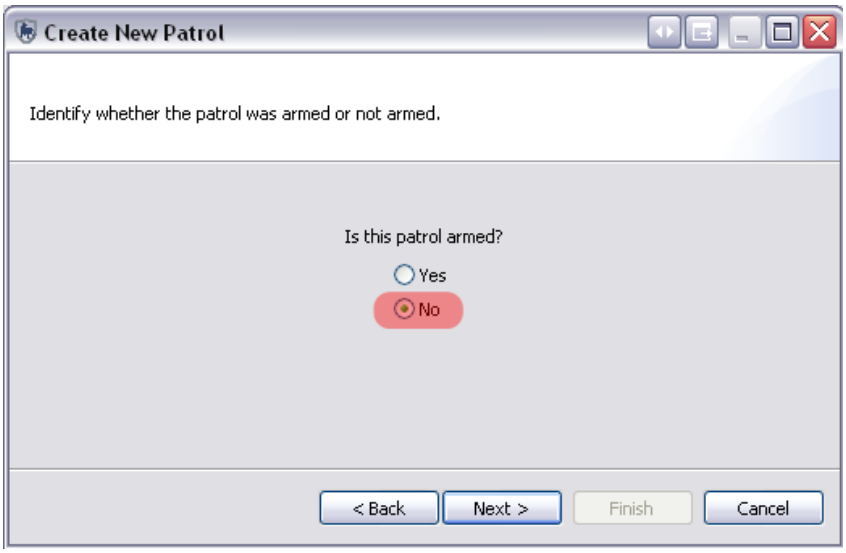
- Click **Next**
- For the window **'Patrol Plan'** – leave as 'None' selected and pass directly to the next window
- For **Intelligence** – no intelligence motivated this patrol so leave blank and click **Next**

The default Patrol Types of Air, Ground and Water are listed at this stage. *Note: this information would typically come from the patrol forms from the rangers in your site.*



- Select **Ground** and click **Next**
- SMART will now reference the previously entered choices for Ground Patrols and populate a pull-down list with those values.
- Select **Foot** and click **Next**

This screen allows you to specify whether the patrol is armed.



- Select **No** and click **Next**

Once again, SMART references the previously entered values for Teams and Stations to populate pull-down lists.

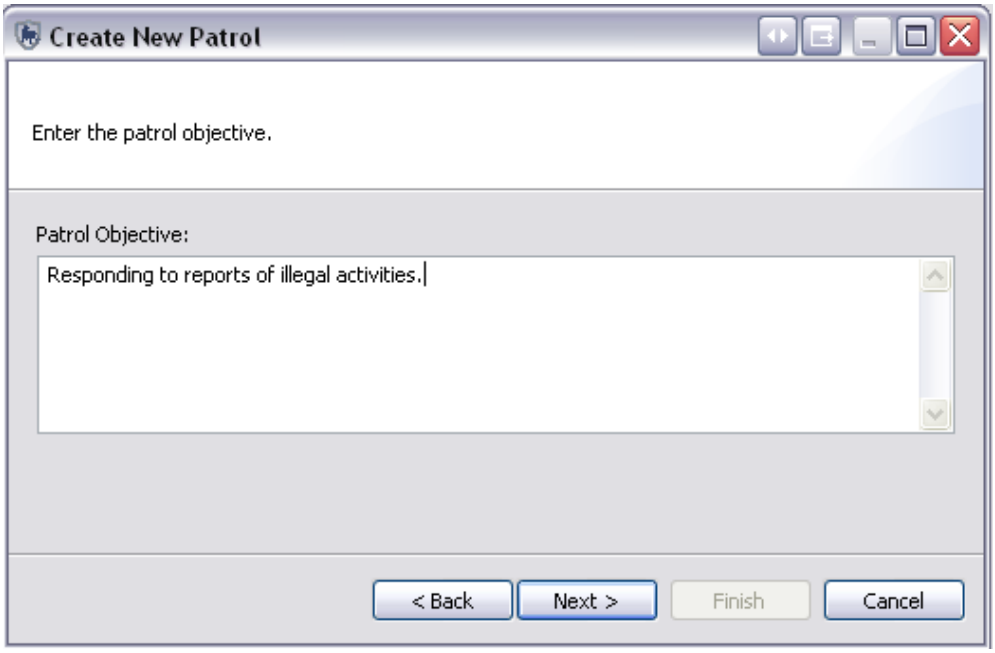
Select

- Team: **Mobile Team 1**
- Station : **HQ**
- **Next**

Select

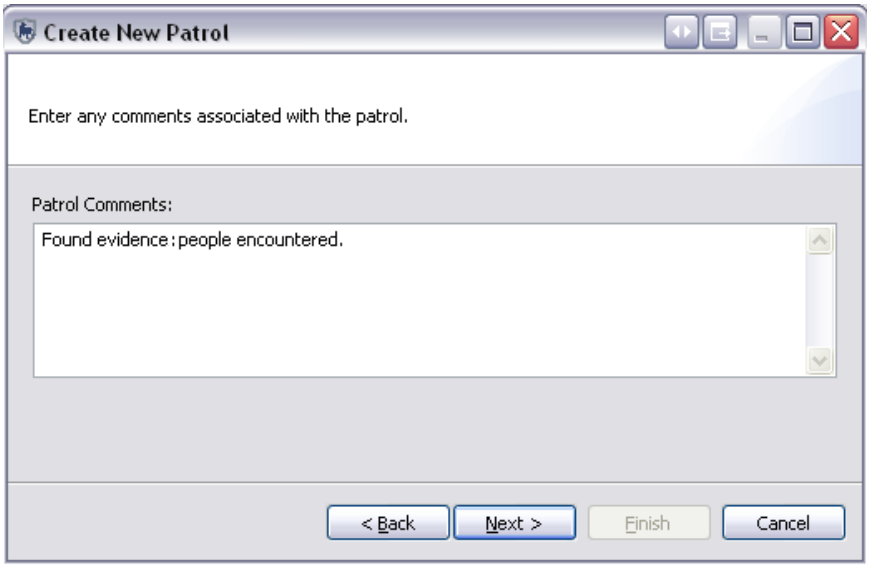
- Patrol Mandate : **Surveillance**
- **Next**

In the Patrol Objectives form you can type free form text to describe the objective of the patrol.



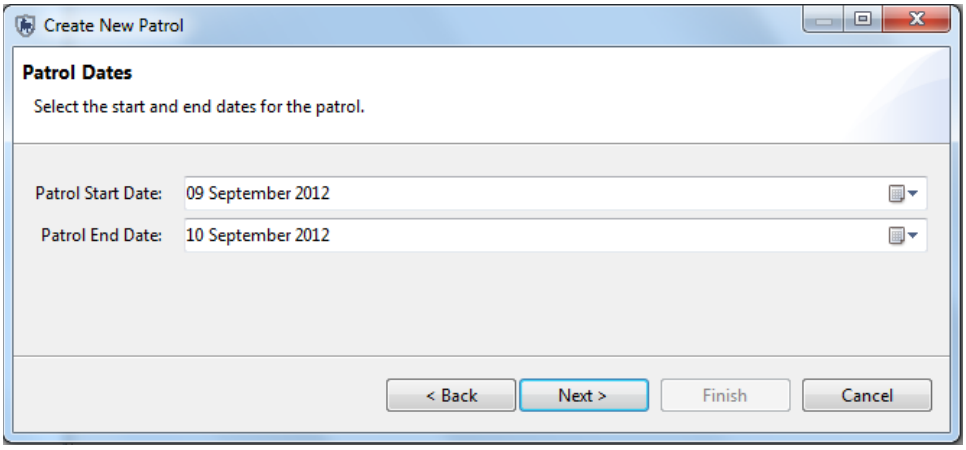
- Type in **"Responding to reports of illegal activities."**
- Click **Next**

In the Patrol Comments form you can type free form text to enter any comments related to the patrol.



- Type in **"Found evidence: people encountered."**
- Click **Next**

The next screen is for entering the start and end date of the patrol.



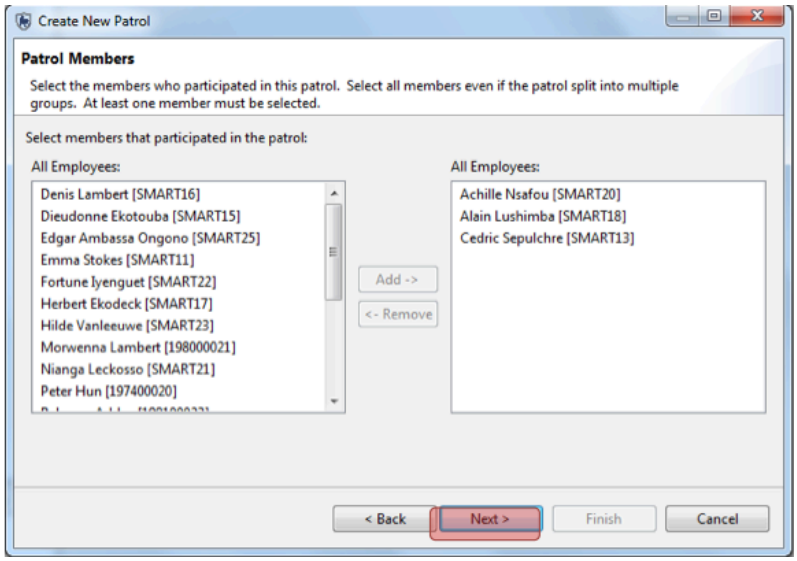
- Enter start date of **9 Sept 2012** and end date of **10 Sep 2012**
- **Next**

Each patrol must have at least one employee associated with it. For this patrol, you will select three employees to be associated with the patrol.

- Click **Add ->** OR double click their **name**

Once the three names appear in the Selected Employees window

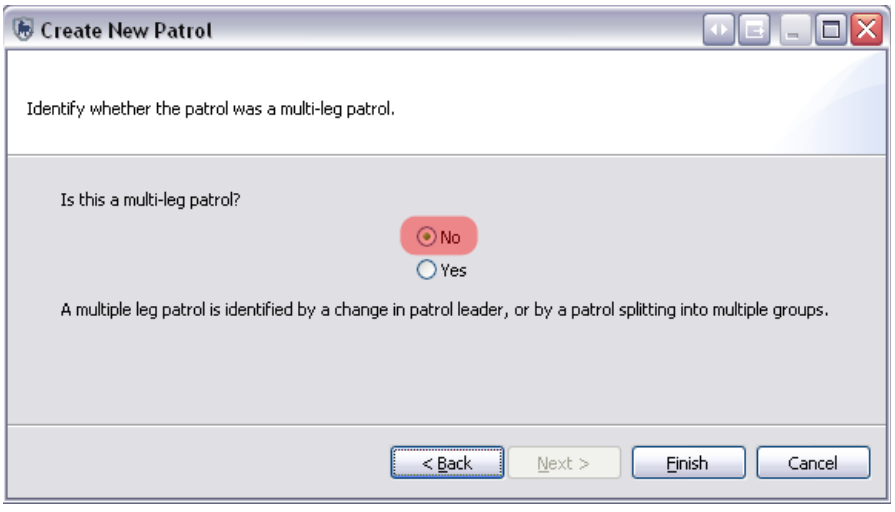
- Click **Next**
- Note: if you added an employee by accident, click **<-Remove**



Each patrol must be assigned a leader. SMART will populate the pull-down list with the three previously selected names.

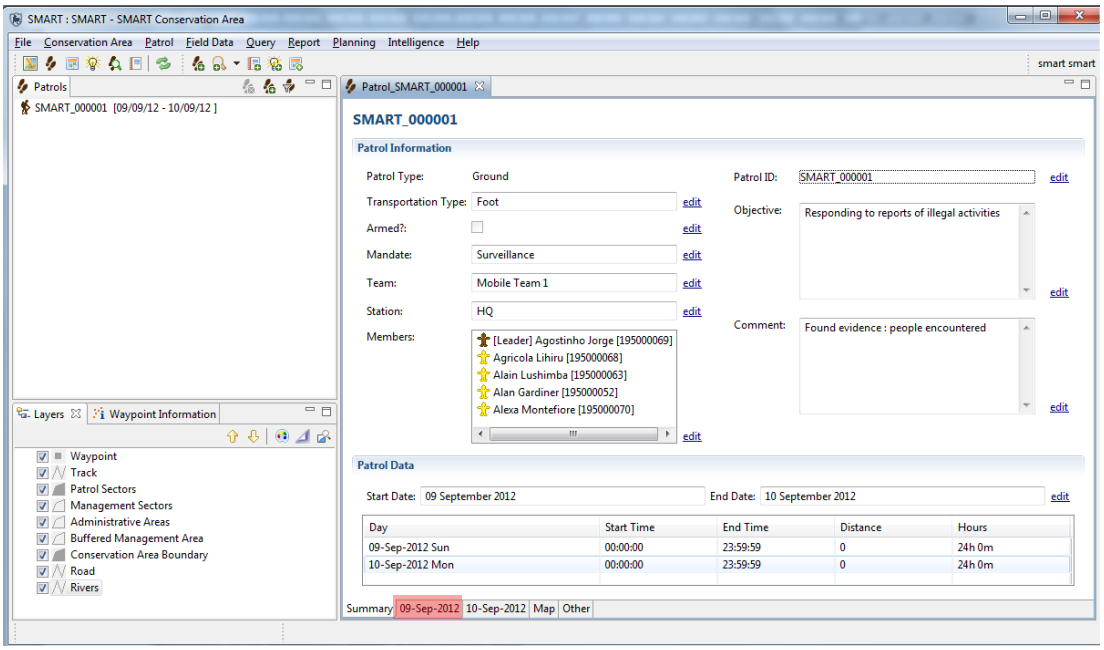
- Select **a patrol leader**
- Click **Next**

SMART has the ability to manage multi-leg patrols. These patrols involve portions of the patrol splitting off into a separate group with their own leader and transport type. Later in the exercise you will create a multi-leg patrol. For this patrol you will keep the default setting.



- Select **No**
- Click **Finish**

SMART will now bring you to the Patrol Summary screen, which shows all of the values that you entered in the previous forms. Any of these can be edited by clicking the **edit** links next to the item.

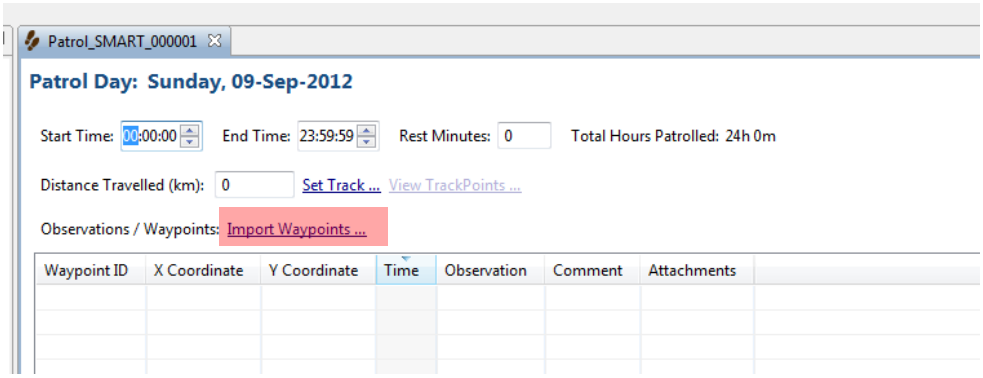


- Click on the date tab **Sep 9 2012**

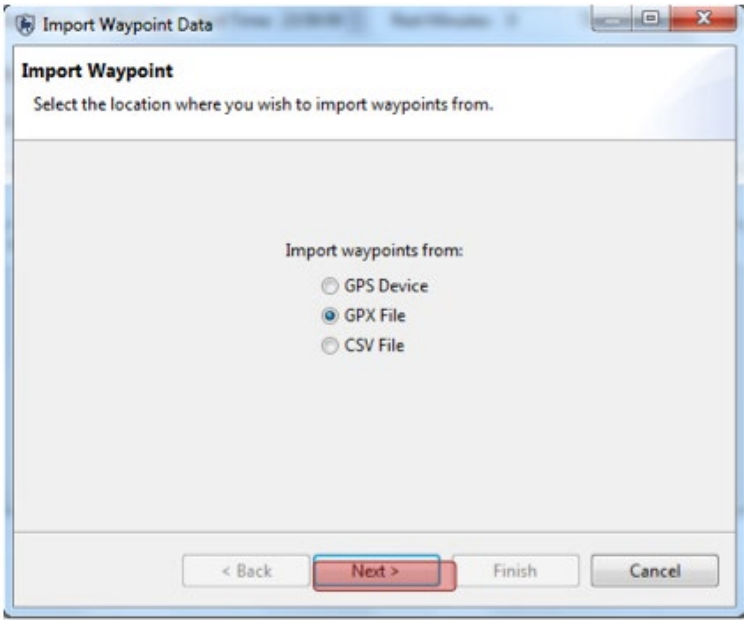
Waypoints

Waypoints can be entered into SMART in four distinct ways:

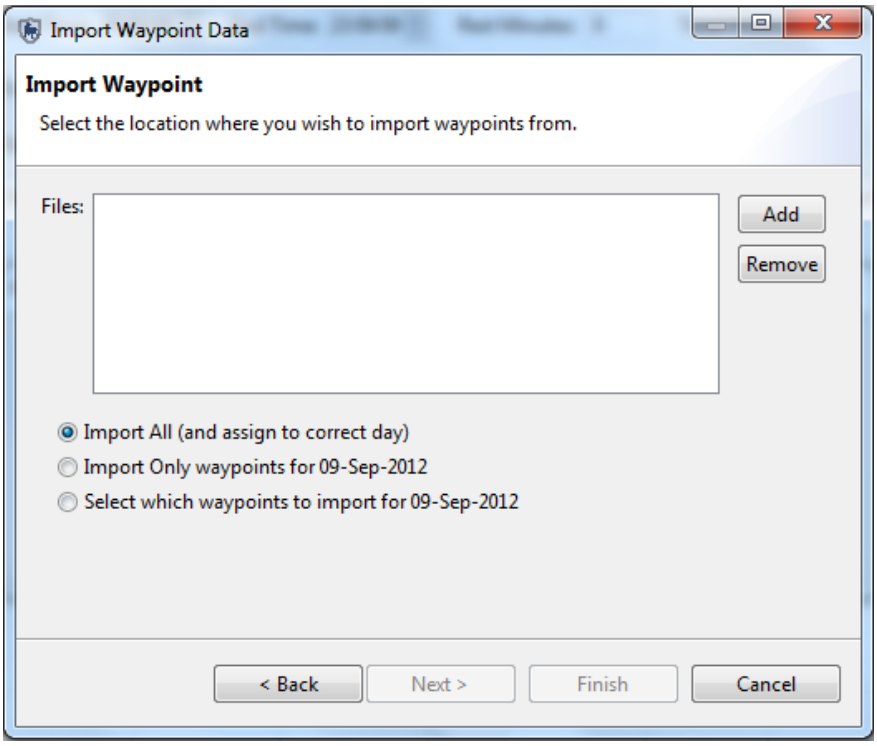
- Direct import from a GPS device;
- Import of a GPX data transfer file;
- Manually entered; or
- Downloading from a csv file- (CSV file import)



- Click **Import Waypoints …**



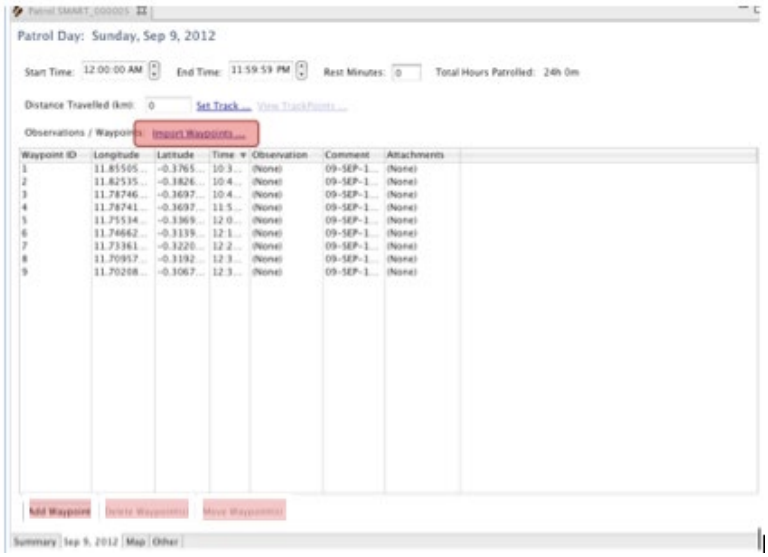
- Select **GPX File**
- Click **Next**



- **Import All (and assign to correct day) -** SMART will use the time provided in the file and assign the collected waypoints to the correct date
- **Import Only waypoints for <date> -** SMART will import only the waypoints for the selected date
- **Select which waypoints to import for <date> -** The SMART user will select and assign waypoints to the selected date

- Select **Import All (and assign to correct day)**
- Click **Add**
- Browse to the folder Module 3 select **SMART_Mission1_wpt.gpx**
- Click **Open**
- Click **Finish**

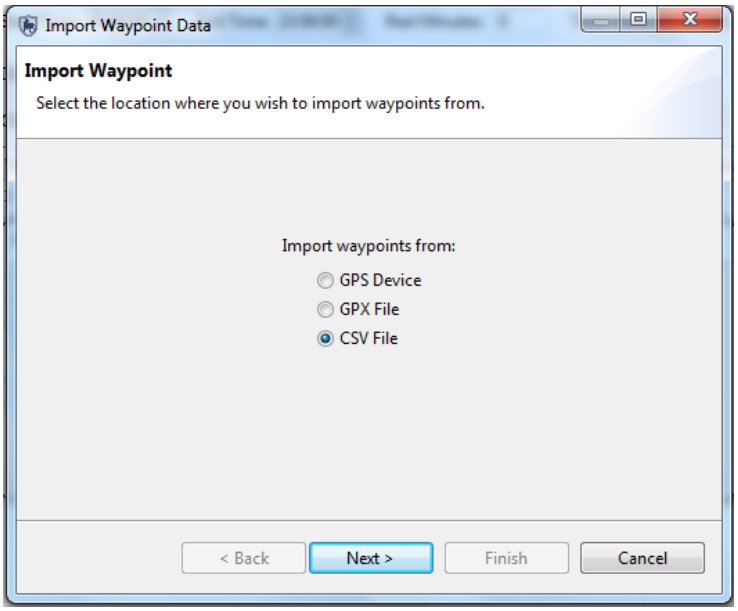
SMART will read the GPX file and assign the waypoints to the appropriate date.



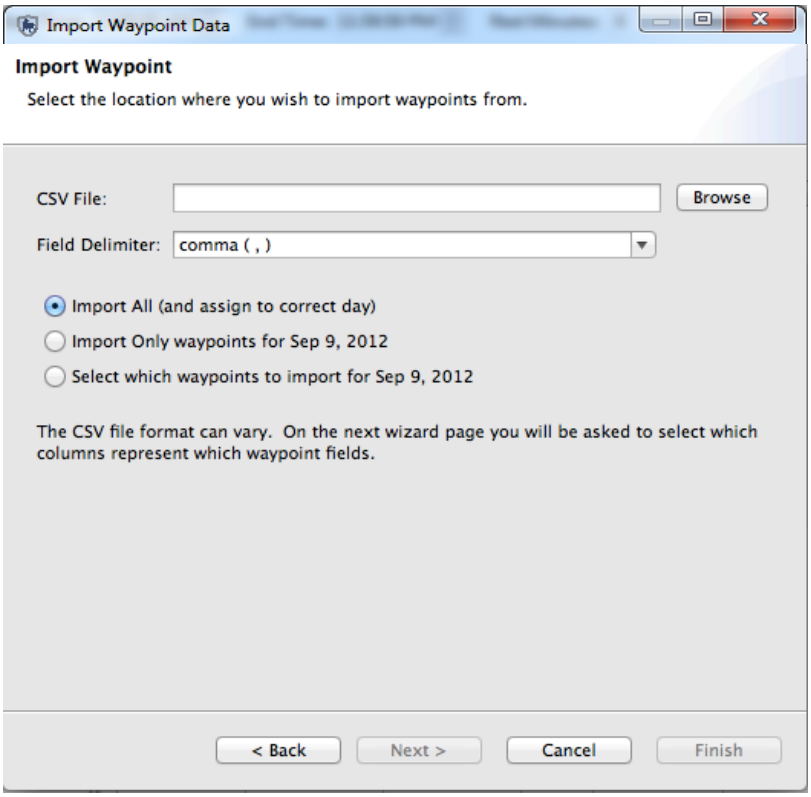
- **Add Waypoint** - Allows for the manual creation of a waypoint
- **Delete Waypoint(s)** - Deletes a selected waypoint
- **Move Waypoint(s)** - Allows for a waypoint to be moved to a different day

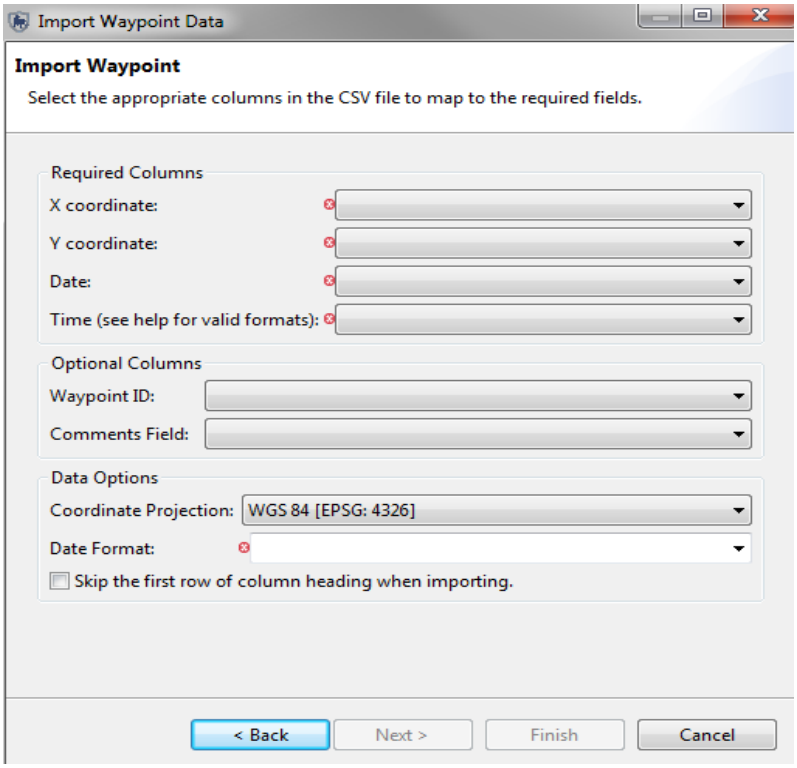
CSV File Import Option

- Click **Import waypoints**



- Select **CSV File option**
- Click **Next -** use this to select the CSV file from which you want to import your waypoints





CSV File Configuration

X- Column - select the text from the first row of the file (header or value), which represents the column where the X co-ordinate values are stored

Y- Column - select the text from the first row of the file (header or value), which represents the column where the Y co-ordinate values are stored

Date - select the text from the first row of the file (header or value), which represents the column where the date values are stored

Time - select the text from the first row of the file (header or value), which represents the column where the time values are stored. Valid time formats are as follows:

1. HH:mm (24-hour time, no seconds given)
2. HH:mm:ss (24-hour time with seconds)
3. hh:mm am (12-hour time, no seconds followed by one of: "am", "pm", "AM" or "PM"
4. hh:mm:ss pm (same as above with seconds)
5. HH:mm GMT-08:00 (24-hour time, with a GMT + or - timezone)
6. HH:mm:ss GMT+03:00 (same as above with seconds)

Optional Columns

Waypoint ID - Select the text that represents the waypoint id you would like to use. Left blank the system will select the next highest number in the patrol-leg-day as the id.

Comments Field - Select the text that represents the comments you wish to be added to the waypoint. Left blank, the comments field in SMART will be blank.

Data Options

Coordinate Projection - Select what projection your X and Y coordinate data is stored in.

Date Format - The format your dates from the Date column are stored in. You may type into this field to describe your format if it does not match one of the listed formats.

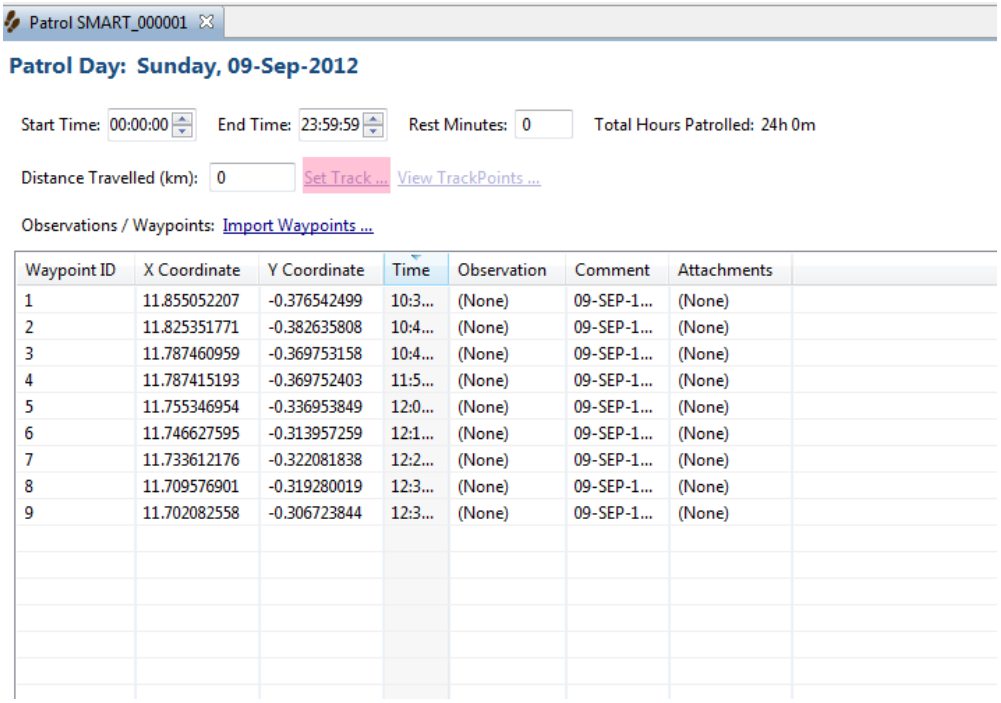
Skip first row... - Check this box if you have a header row at the top of your data.

Setting Tracks

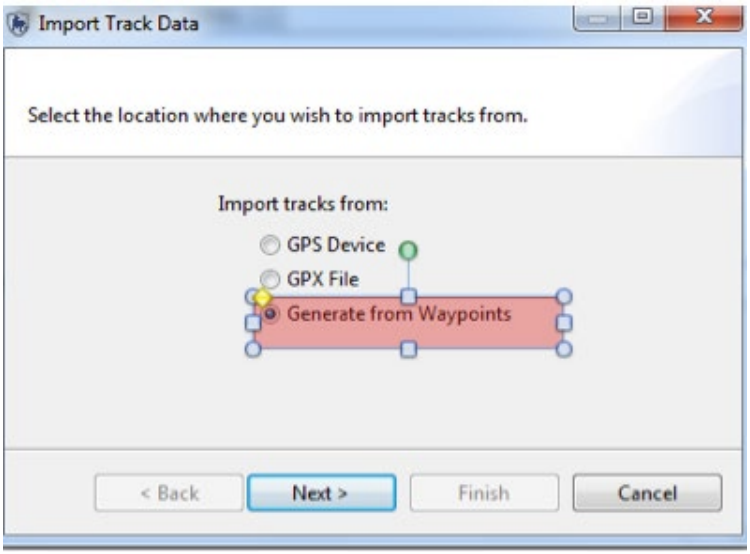
As part of the patrol, Tracks allow SMART to make calculations based on the length of the patrol and to allow for visualization of the patrol's route.

Most GPS units collect Track information, and SMART has the ability to import Tracks in the same way as waypoints were imported. SMART can also calculate Tracks based on the available waypoint location and waypoint times.

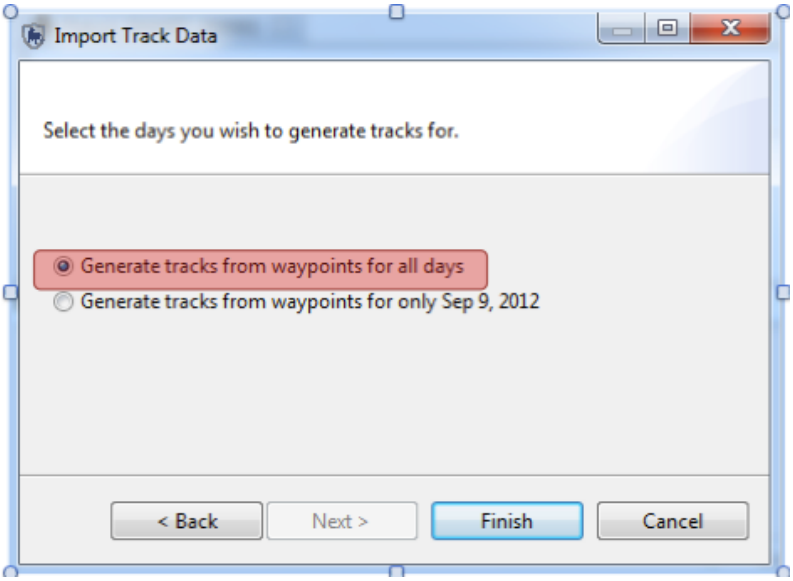
- Click **Set Track … (see below screenshot for location)**



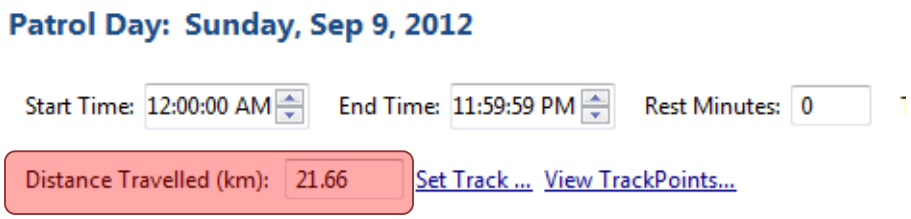
Waypoint ID	X Coordinate	Y Coordinate	Time	Observation	Comment	Attachments
1	11.855052207	-0.376542499	10:3...	(None)	09-SEP-1...	(None)
2	11.825351771	-0.382635808	10:4...	(None)	09-SEP-1...	(None)
3	11.787460959	-0.369753158	10:4...	(None)	09-SEP-1...	(None)
4	11.787415193	-0.369752403	11:5...	(None)	09-SEP-1...	(None)
5	11.755346954	-0.336953849	12:0...	(None)	09-SEP-1...	(None)
6	11.746627595	-0.313957259	12:1...	(None)	09-SEP-1...	(None)
7	11.733612176	-0.322081838	12:2...	(None)	09-SEP-1...	(None)
8	11.709576901	-0.319280019	12:3...	(None)	09-SEP-1...	(None)
9	11.702082558	-0.306723844	12:3...	(None)	09-SEP-1...	(None)



- Select **Generate from waypoints**
- **Next**
- Select **Generate tracks from waypoints for all days**
- **Finish**

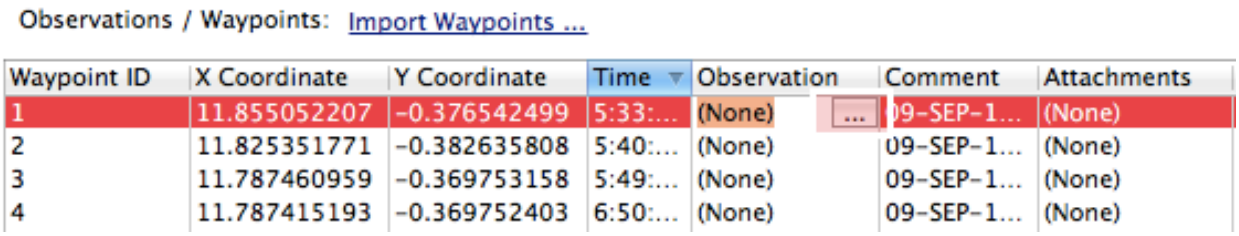


***Note**: It is at this screen where you can choose to have SMART **calculate** the Track based on the previously imported waypoints, if no GPS track data is available.*

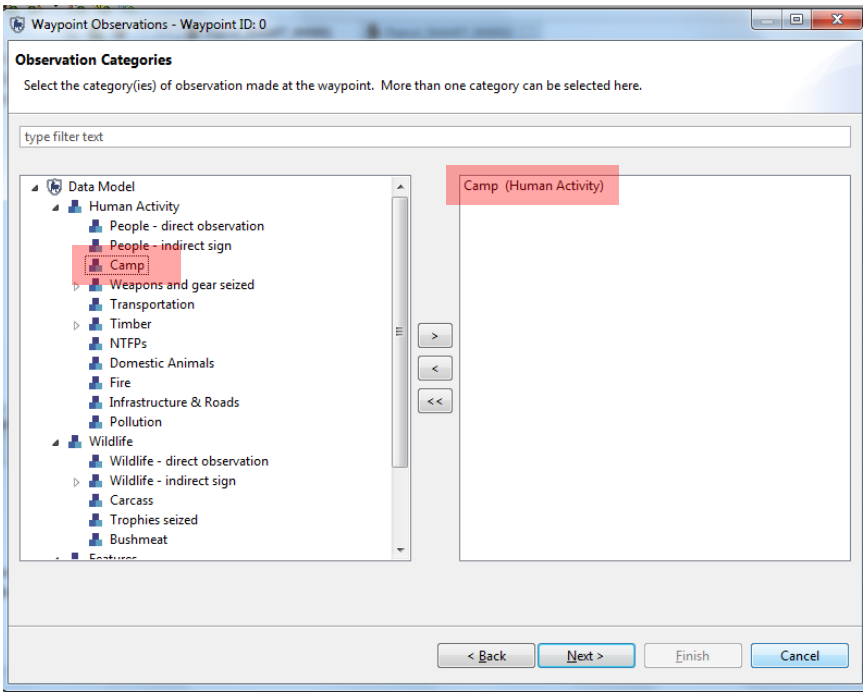


Entering Observations

At this point, you should have configured your Conservation Area with an appropriate observation data model. Now comes the time to transfer the observation data collected in the field into SMART.



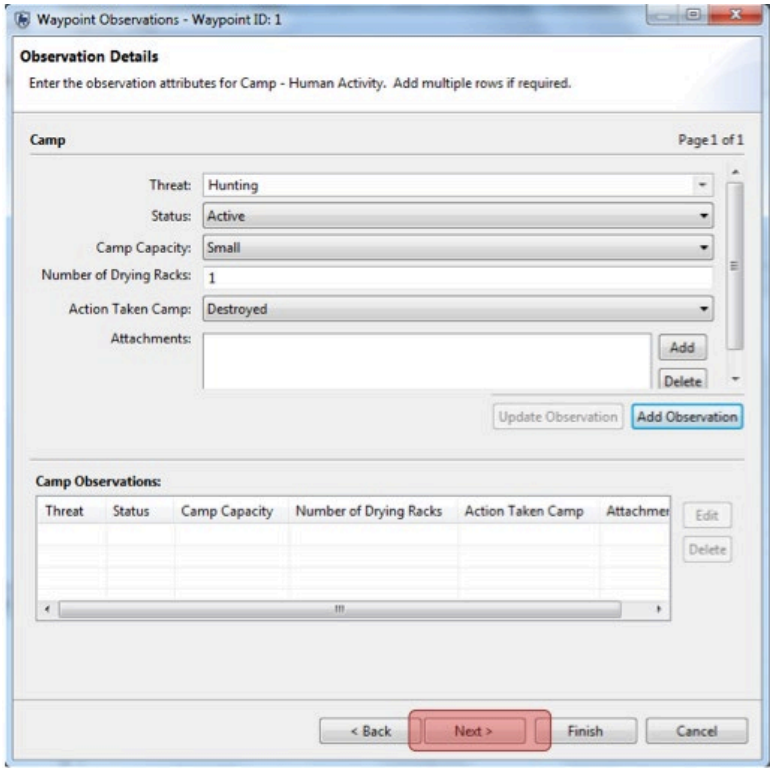
- Double-Click the **Observation cell** for Waypoint 1
- Click the **square button** (highlighted above) on the right to bring up the observation data model



You are now going to start to enter observations. Observations normally come from the data sheets the rangers have provided. For training purposes, in this manual, we will provide you with examples to test.

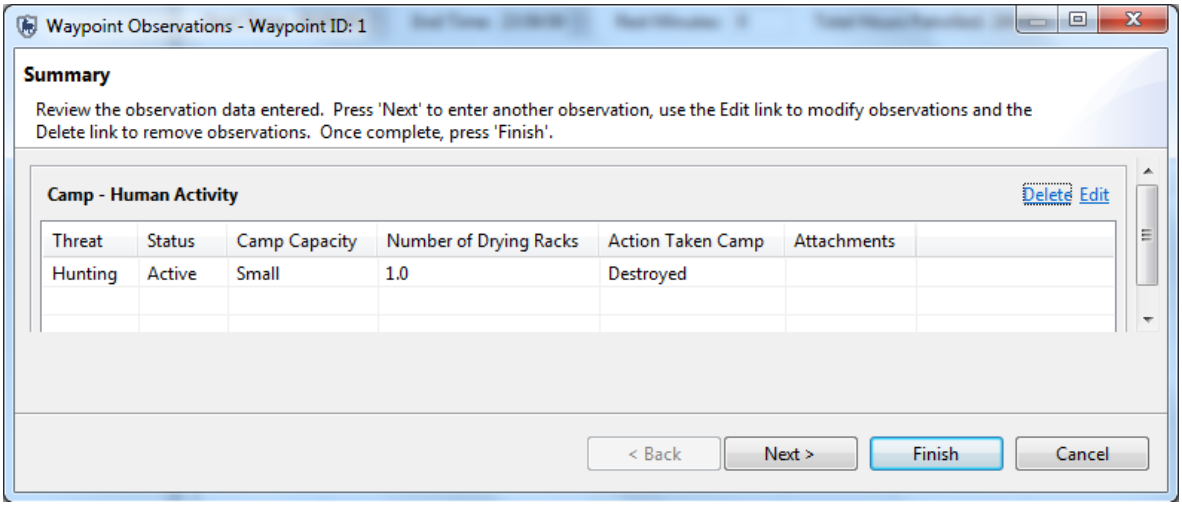
Firstly for this first waypoint (**a hunting camp that was burned down by the patrol team)**

- Double-click on **Camp** OR click **>** in the center to add it to the right-hand window
- **Next**



- Enter the observation details as follows:
  Threat = **Hunting** *(**Note** : you can start typing 'hunting' directly in the text box, select 'Hunting' from the drop down list, then click Enter)*
  Status = **Active**
  Camp Capacity = **Small**
  Number of Drying Racks = **1**
  Action Taken Camp = **Destroyed**
  ***Note** : To navigate between the different observation attributes, use the tab key. To select from the drop down list for each attribute, use the left/right arrows and click Enter on the selection*

- Click **Next**
- Click **Yes** when asked if you want to save your changes
- You can now preview the observation data to check it
- If you want to make edits click **Edit in the upper right corner**
- If not, click **Finish**



You can now see the observation of a Camp (1) in the patrol window corresponding to Waypoint 1

Now you're going to fill in the observation data for the remaining waypoints

Note: *The default value for all waypoints in SMART is 'none' which is equivalent to the 'Position' point in MIST.*

Waypoint 2 – Direct observation of an adult male elephant

- Double-click in the observation cell for Waypoint 2 to open the data model
- Under **Wildlife**, double-click on Wildlife – Direct Observation
- **Next**
- Threat = **'none'**
- In the **Species** window, start to type **'Elephant'**
- Select '***Loxodonta africana (African Elephant)'***
- **Number of Adult Males = 1**
  Action Taken Live Animals = **Observed only**
- Leave the other attributes blank
- Click **Finish**
- Click **Yes** to save.

Waypoint 3 – Two hunters arrested by the patrol

- Double-click in the observation cell to open the data model
- Under Human Activity, double click on **People – direct observation**
- **Next**
- Threat = **Hunting**
- Number of People **= 1**
- Armed? = **Unarmed**
- Place of Origin = **Village A**
- Sex = **Female**

- Action Taken People = **Arrested**
- Leave the other attributes blank
- Click **Finish**
- Click **Yes** to save.

Waypoint 4 – Large and active hunting camp with 3 drying racks. Destroyed by the patrol.

- Follow the steps under Waypoint 1

Waypoint 5, 6 – Position points

- Leave as default option 'none'

Waypoint 7 – A hunter (male, Village B) given a verbal warning by the patrol

- Follow the steps under Waypoint 3

Waypoint 8 & 9 – Position point

- Leave as default option 'none'

Go to the second patrol day by selecting the date tab for Sep 10, 2012

Waypoint 10 – Position point

- Leave as default option 'none'

Waypoint 11 – Fresh poached elephant carcass. Tusks still present and seized by the patrol

In SMART you are able to enter multiple observations, such as observing a carcass AND seizing the trophies, for a single waypoint.

For this waypoint (11), you will enter multiple observations (observation of a carcass and seizure of trophies – in this case tusks)

- Double-click in the observation cell to open the data model
- Under Wildlife, double click on **Carcass** and **Trophies Seized** to add them both to the right-hand window
- **Next**
- First, we'll enter the details for the carcass
    - Threat **= Hunting**
    - Species = **ELEPHANTIDAE** (start typing directly into the text filter to bring up the options)
    - Cause of Death = **Illegal**
    - Age of Animal Carcass = **Fresh**
    - Age of Animal = **Adult**

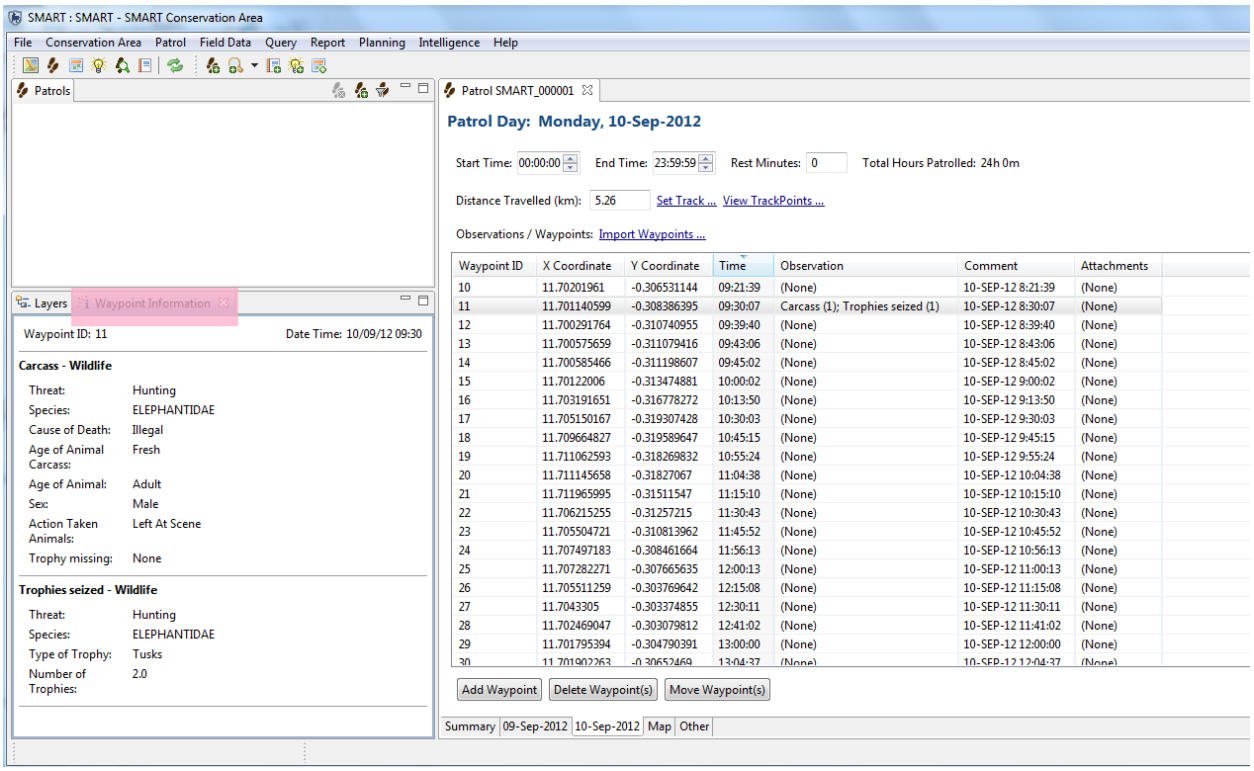
- Sex = **Male**
- Action Taken Animals = **Left at scene**
- Trophy Missing = **None**
- Select **Add observation**
- **Next**

- Now you are going to enter the details for the two trophies that were found by the patrol and seized
  - Threat = **hunting**
  - Species = **ELEPHANTIDAE**
  - Type of Trophy = **Tusks**
  - Number of Trophies = **2**
  - Select **Add observation**
  - **Finish** and **Save**

You'll now see two observations entered under Waypoint 11

Waypoint ID	X Coordinate	Y Coordinate	Time	Observation	Comment	Attachments
10	11.70201961	-0.306531144	09:21:39	(None)	10-SEP-12 8:21:39	(None)
11	11.701140599	-0.308386395	09:30:07	Carcass (1); Trophies seized (1)	10-SEP-12 8:30:07	(None)
12	11.700291764	-0.310740955	09:39:40	(None)	10-SEP-12 8:39:40	(None)

Select Waypoint 11 and check the details of the observation in the left-hand bottom corner of the patrol window under **Waypoint Info**



Waypoint 12 – Position point

- Leave as default option 'none'

Waypoint 13 – A group of chimpanzees observed, composed of 1 male, 4 females and 2 juveniles

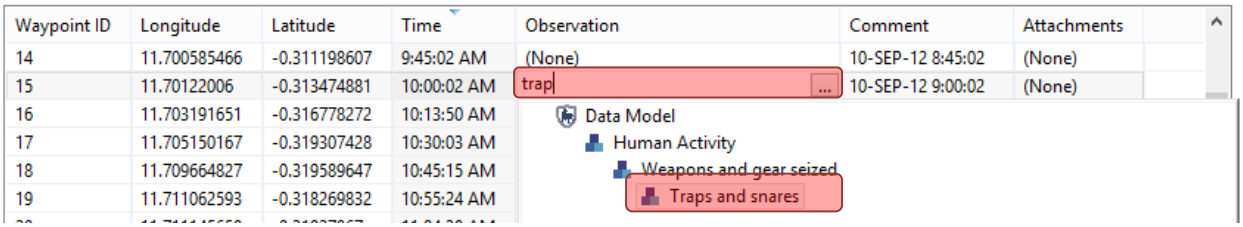
- Follow the steps under Waypoint 2 (selecting Species **= Chimpanzee**)

Waypoint 14 – Position point

- Leave as default option 'none'

Waypoint 15 – 15 set snares (wire cables) seized by patrol

- In the observation cell, you can take a shortcut to the data model by starting to type **'snare'** directly in the observation window



- Double-click **Traps and snares** form the drop-down list
- Click **Enter**
- Click **'Next'** in the data model window (the observation Snares is already added)
    - Threat = **hunting**
    - Number of weapons or gear = **15**
    - Type of Trap = **Wire Snare**
    - Is active = **Yes**
    - **Finish** and **save**

Waypoint 16 – Position point

- Leave as default option 'none'

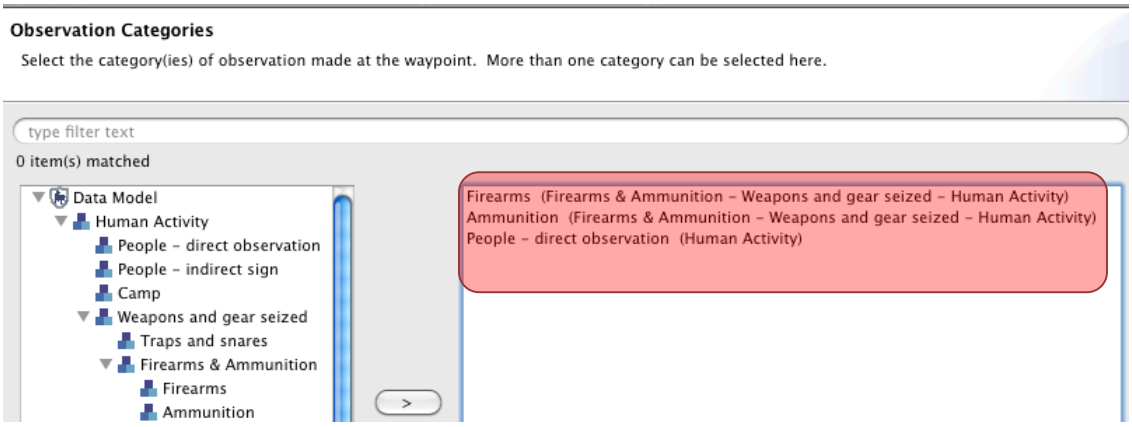
Waypoint 17 – A poacher arrested by the patrol. The patrol also seized a military weapon, ammunition for the weapon, and 15kg of fresh buffalo bushmeat from the poacher

You are going to enter 4 observations under Waypoint 17:

1. **Human activity – People – direct observation** (for the poacher who was arrested)
2. **Human activity – Weapons and gear seized – Firearms & Ammunition – Firearms** (for the military firearm seized)

3. **Human activity – Weapons and gear seized – Firearms & Ammunition – Ammunition** (for the ammunition seized)
4. **Wildlife - bushmeat** (for the fresh buffalo meat seized)

- Double-click in the observation cell to open the data model
- Add all the four categories listed above in the right-hand window



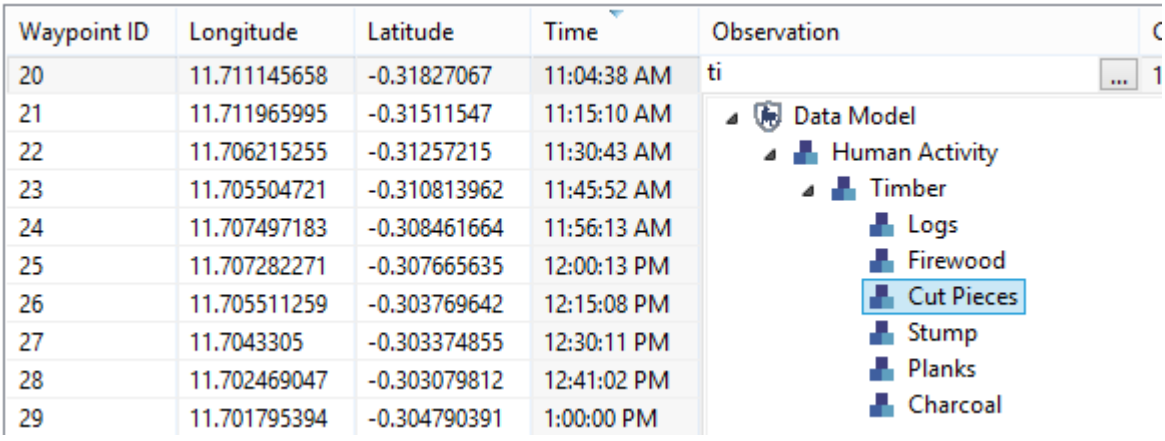
- Enter the details for each observation
- **Finish**

Waypoint 18 & 19 – Position point

- Leave as default option 'none'

Waypoint 20 – Confiscation of 25m^3 of illegally harvested wood (Ebony)

- Start to type **Timber** directly in the observation cell and select **Cut Pieces** form the drop down list.



- **Enter**
- Click '**Next**' to go directly to the details of the observation

- Threat = **Logging & Wood Harvesting** (you can start typing directly in the text filter)
- Action Taken Items = **Confiscat**ed
- Age of Sign = **Fresh**
- Timber Tree Species = **Ebony**
- **Finish** and **Save**

Waypoint 21 – Position point

- Leave as default option 'none'

Waypoint 22 – A fresh gorilla nest observed by the patrol

- Type '**Nest'** directly in the observation cell to bring up the drop-down list: select **Wildlife - Indirect Sign – Nest** and click **Enter**
- For the observation details:
  - Threat = **None**
  - Species = **Gorilla**
  - Age of Sign = **Fresh**
- **Finish** and **Save**

Waypoint 23 – Position point

- Leave as default option 'none'

Waypoint 24 – A bottle of 1m^3 of honey collected from the forest seen by the patrol

- Double-click in the observation cell to open the data model
- Add **Human Activity – NTFPs**
- Threat = **NTFP collection**
- Enter the remaining details as necessary

Waypoint 25 – Position point

- Leave as default option 'none'

Waypoint 26 – A fresh spent gun cartridge seen by the patrol

- Double-click in the observation cell to open the data model
- Add '**Human Activity – Weapons & Gear Seized – Firearms & Ammunition – Spent Cartridges'**
- Enter the remaining details as necessary

Waypoint 27 – Position point

- Leave as default option 'none'

Waypoint 28 – A bushfire (12 ha burnt) set to flush out animals for hunting, observed by the patrol

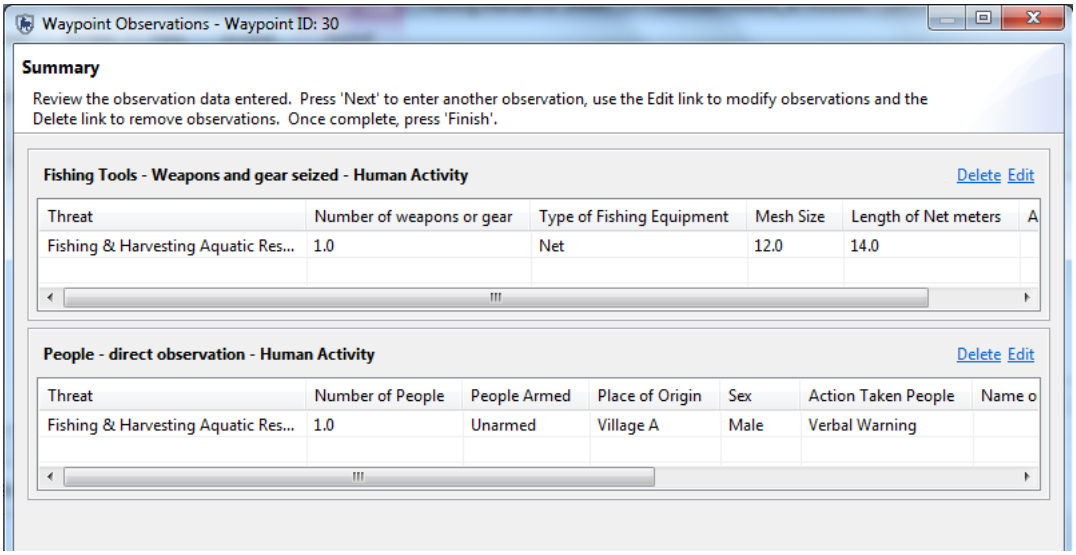
- Double-click in the observation cell to open the data model
- Add **'Human Activity – Fire'**
- Enter the remaining details as necessary

Waypoint 29 – Position point

- Leave as default option 'none'

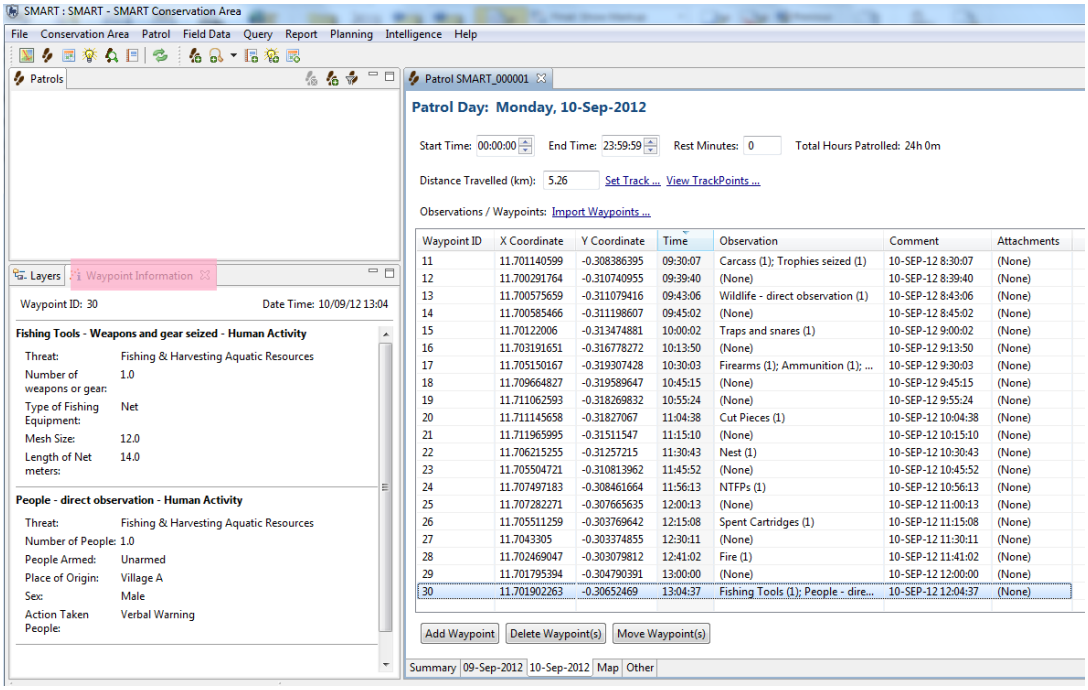
Waypoint 30 – An illegal fisherman given a verbal warning by the patrol and his fishing net confiscated

- Double-click in the observation cell to open the data model
- **Add Human Activity – People – Direct Observation** AND **Human Activity – Weapons and Gear Seized – Fishing Tools**
- Enter the details as follows:



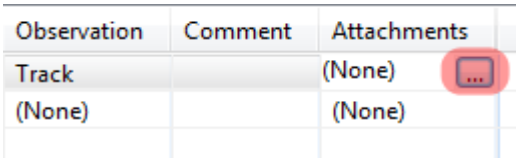
- **Finish** and **Save**

You can preview all the observations you have entered by selecting the waypoint of interest and viewing the **'Waypoint Info'** in bottom left-hand corner of the patrol window

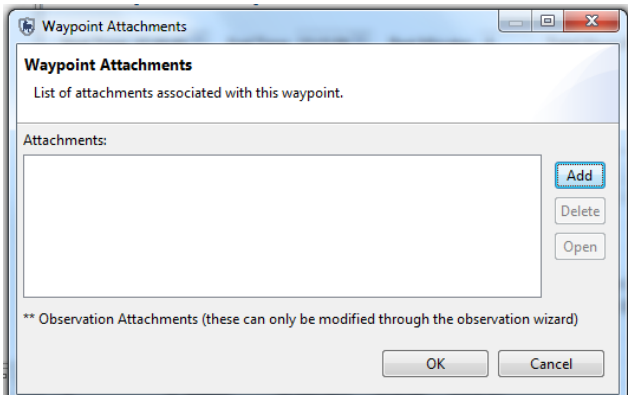


Adding Attachments

Attachments of any file type can be added to each waypoint via the observation window.



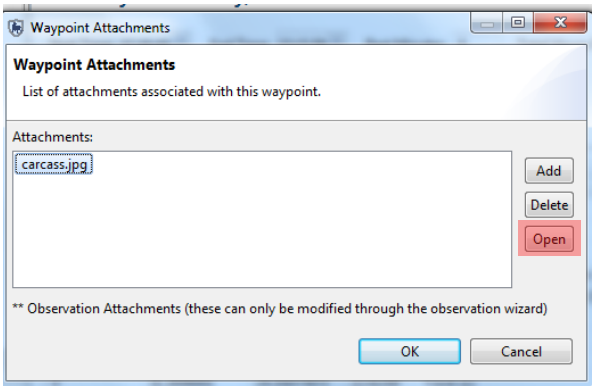
- Double-click the **Attachment** cell for Waypoint ID 11
- Click the square **icon** to launch the file attachment process



- Click **Add**
- Browse to the folder **Module 3**
- Select the file **carcass.jpg**
- Click **OK**

Viewing Attachments

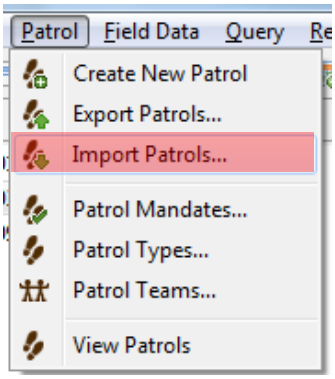
Attachments in SMART are opened by other applications that are installed on your computer.



- Open the Waypoint dialog box
- Click on **carcass.jpg**
- Click **Open**

Importing Patrols

Now that you have worked through the process of creating a couple of patrols you will now import a few more patrols. Patrol exports/imports allows for multiple computers to be used to enter in the patrol information while allowing one or more computers to function as the central computer that imports all of the patrols.

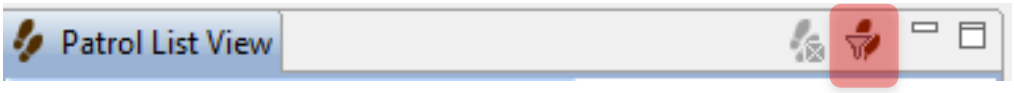


- From the menu select **Patrol - Import Patrol**
- Click **Add**
- Browse the folder **Module 3\Patrols** on the USB
- Select the two patrols **SMART_000002** and **SMART_000003.** *Note: for this exercise do not change the given patrol ID number. However, this can be adjusted in the future.*

- Click **Import**

After a successful import you should see more patrols in the Patrol Perspective window.

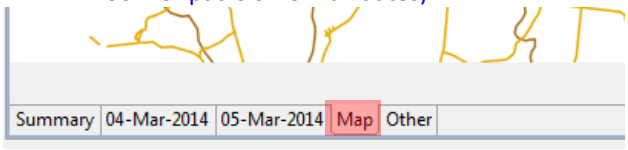
*Note: To view all patrols, select the **Patrol Filter** and specify '**Include All Dates**' since, by default, only the last 30 days are visible*



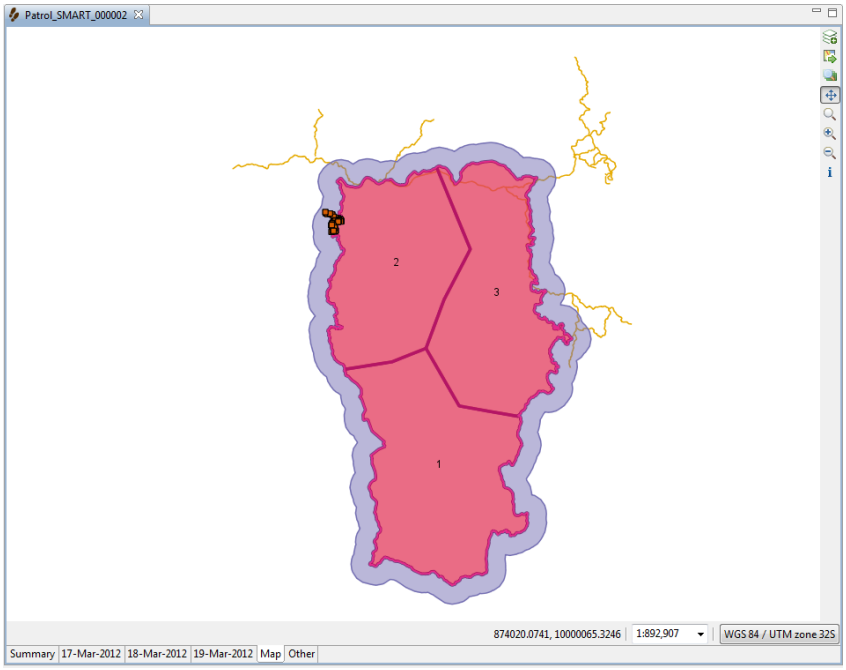
Patrol Perspective - Map

The initial map perspective is only one area where the mapping layers can be accessed. There are mapping windows in the Patrol and Query Perspectives which should all appear the same now that you have set a Basemap for the session.

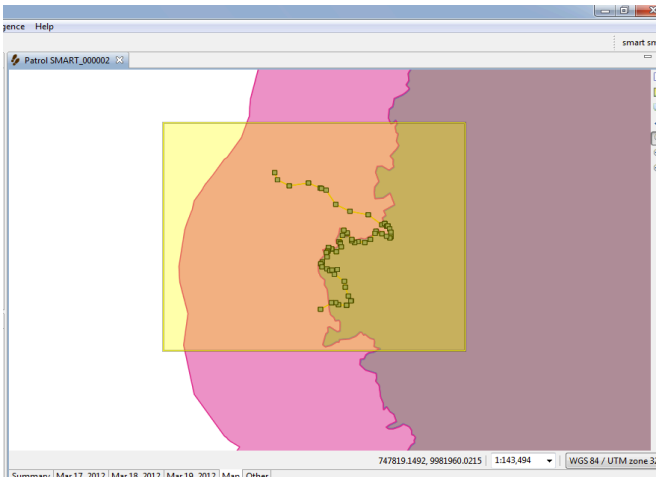
- In the Patrol List View double-click the patrol **SMART_000002** (you may have to change the patrol filter to look for patrols from all dates)



- At the bottom of the screen select the **Map** tab

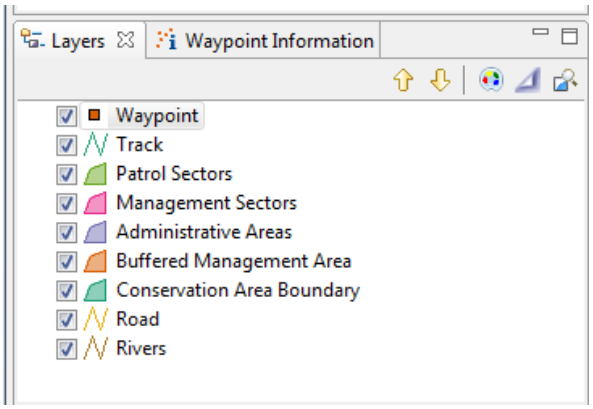


***Note**: In the bottom left-hand Layers window you may have to move the waypoints and track to the top of the legend to view it properly*

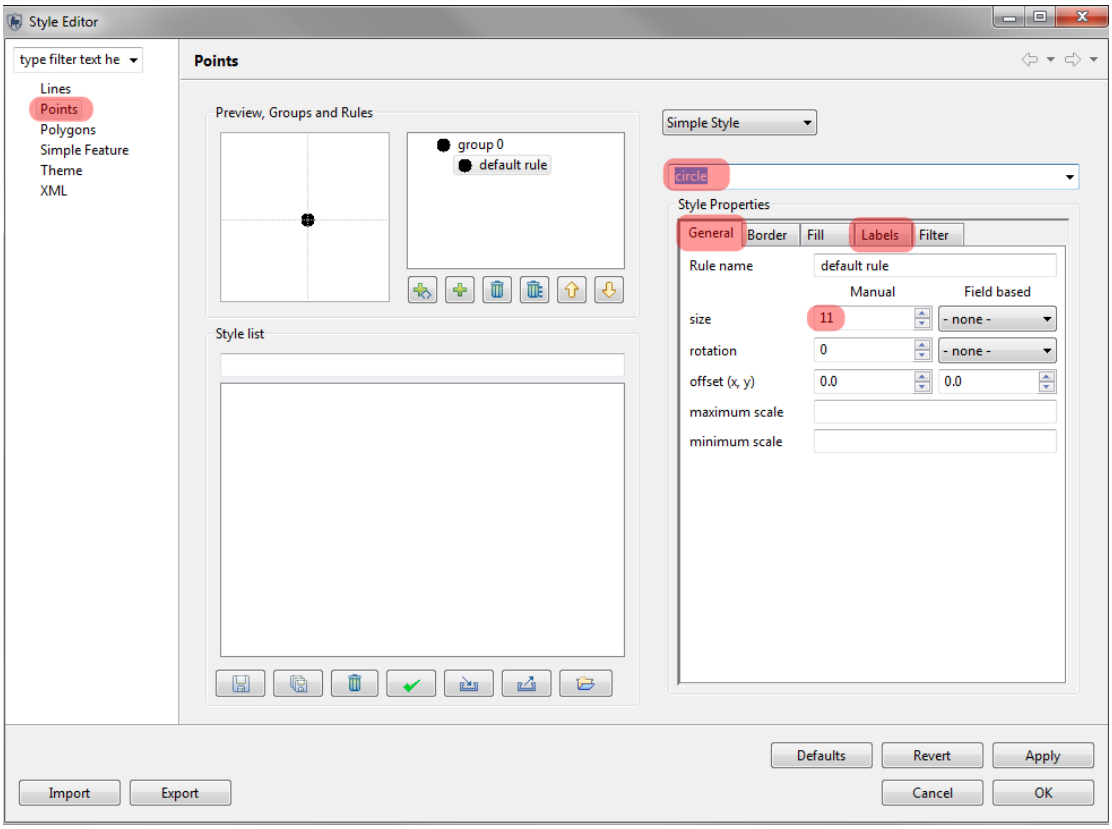


- Using the Zoom icon  draw a box around the circle of waypoints for the patrol

In the lower left Layers window you will see the legend for the boundary layers as well as two new layers (Waypoint and Track)



As with the boundary layers the Waypoint and Track layer can be styled and labelled.



- Select the layer **Waypoint**
- Click the **Style Editor icon**
- On the left select **Points**
- From the dropdown (above Style Properties) select **circle**
- In the General tab of Style Properties set **size to 11**
- In the Fill tab set color to **black**
- In the Labels tab
    - **enable labelling**
    - Set Field based labels to **observation**
- Click **Apply,** then **OK**

Information Tool

The map windows for the patrol and query perspective contain an extra icon that is not available in the map perspective mapping window.

	The map info tool allows for more information to be displayed in the mapping window.

- Click the Map Info tool to activate it.
- Click on a **waypoint**
- Select the waypoint in the **Information tab** on the left
- Click on the **Waypoint Information** tab for observation details

***Note**: At anytime during a session the SMART windows can be resized, undocked, and repositioned. If you wish to reset the SMART application back to its default window placement you will need to click the double green arrows just below the menus.*

- Click the **window reset icon** to return to the default settings
- Click **Yes**

You should still be zoomed into the points and track for the patrol SMART_000002.

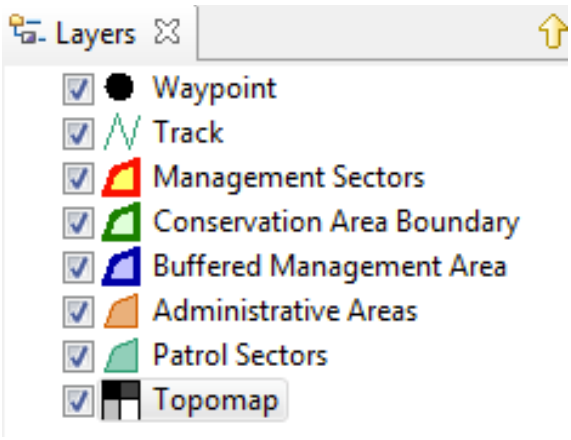
- To return to the full extent click the **zoom to map extents** icon 

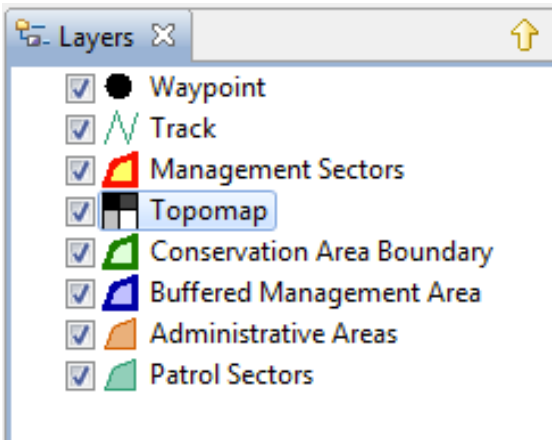
Adding New Layers

Note**: To bring in your default basemap into the patrol perspective click on the **sets the basemaps icon  *in the upper right part of the SMART application. Once loaded select the map you want to use and click on **Load**.*

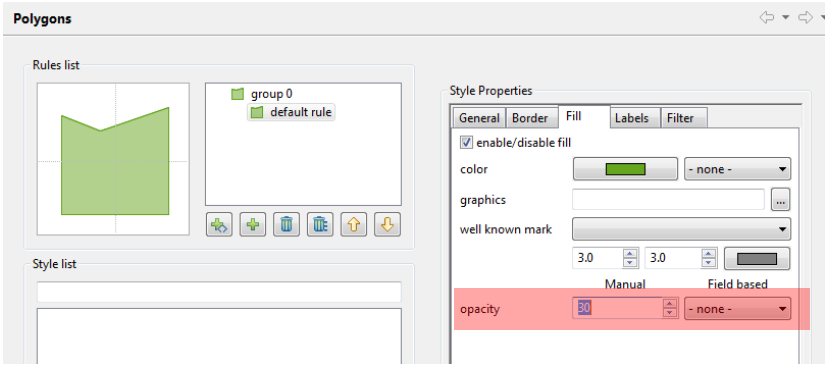
- In the upper right part of the SMART application click the **add a layer to the map** icon 
- Select **Files**
- Click **Next**
- Open the folder **Module 3**
- Select the file **Topomap**
- Click **Open**

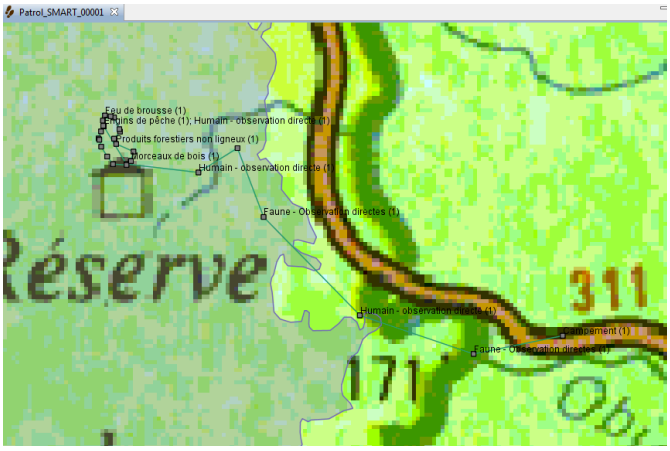
After the import process has finished the layer will appear at the bottom of the Layers list.





***Note**: For better viewing options. Select Patrol Sector, Open Style Editor and under Polygons and Fill reduce the opacity value to 30*





Field practical – Data collection for Multi-leg Patrols

In this module, you will gain experience in recording observations, transferring GPS waypoints into SMART, and also entering the field observations.

You will be using the **SMART – SMART Conservation Area** for this exercise *(Username/Password: smart/smart)*

***Note**: this module is not intended to be a tutorial on the usage of your GPS device.*

This will include:

- **A field exercise to collect GPS data and record observations for a multi-leg patrol;**
- **Creating new patrols based on the field exercise;**
- **Transferring waypoint data directly into SMART; and,**
- **Entering in observations collected during the field exercise;**

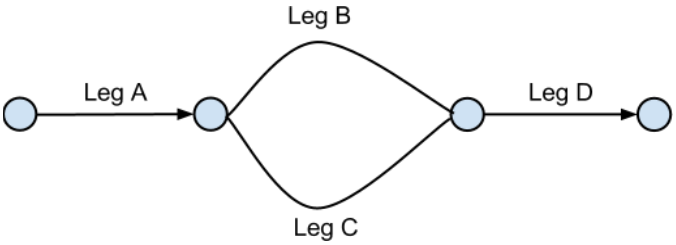
Multi-Leg Patrols

SMART has the ability to track multi-leg patrols. A multi-leg patrol occurs when a patrol group splits up into smaller groups. Each of the smaller groups can have its own patrol leader, patrol transport type and patrol pilot (if available). Groups can be recombined at a later date.

A multi-leg patrol is tracked as a single patrol in SMART with Legs identifying the components within the patrol.

In this exercise, you will divide up into 3 patrol teams.

In this example, for each patrol team, all the patrol members are together on foot for the first leg (Leg A). The patrol then splits into two – half the team continue on foot (Leg B) and half the team continue by vehicle (Leg C). The two then meet up again to finish the patrol together by vehicle (Leg D).



For each leg, you collect GPS points and record observation as for a normal patrol. You'll need a GPS and a data collection form.

For each observation and for each change in patrol leg, you need to:

- Mark a waypoint (keep the default waypoint number on the GPS).
- Record the observation and waypoint number on the data form.

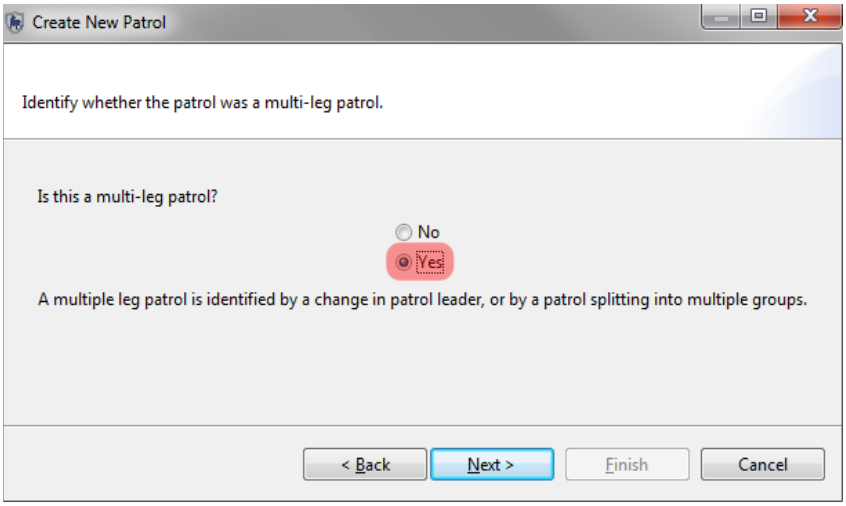
***Note**: When you begin your 'patrol' set your GPS to also record an automatic tracklog and set the time interval to record every 5 minutes. For Garmin 60Csx models, do NOT save the active track.*

When you are back from your patrol follow the steps below.

Creating a Multi-Leg Patrol

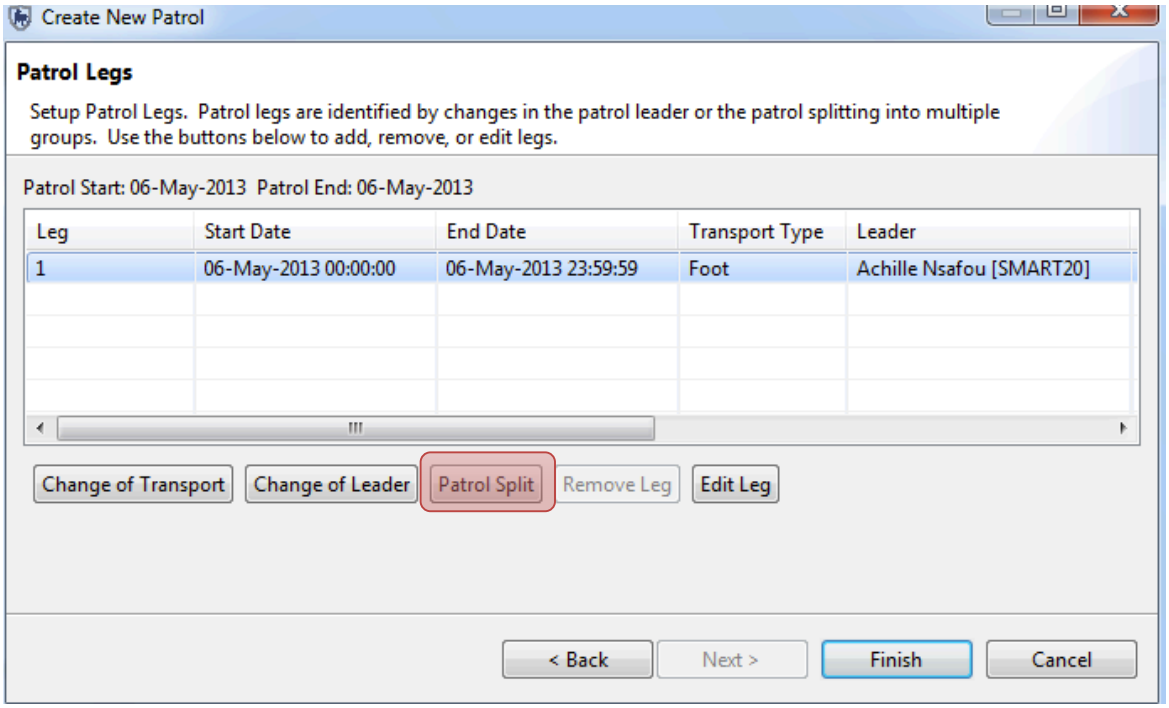
The process for creating a multi-leg patrol is very similar to the previous example. The initial steps in setting up the patrol framework in the same until the step in creating the patrol leg divisions.

- Click on **Create New Patrol**
- Enter the **type**, **transport**, **team**, **station** and **patrol mandate** that you wish (for the **transport type** select the **transport** for the first leg)
- Select **today's date** for the start and end of the patrol
- Select your **team** (include the whole team)
- Select a **team leader** (for the first leg)
- Click **Yes** for a multi-leg patrol



- Click **Next**

At this point, you are going to create a patrol split for the second leg. Other options are also possible (change of leader, change of transport).



- Select **Patrol leg 1**
- Click on **Patrol split**

Change of transport – Change transport type during patrol

Change of leader – Change patrol leader during patrol

Patrol split – Patrol splits into two (each has their own leader and transport type)

Edit leg – Change settings (e.g. name of leg)

You should use the following screenshot as reference to what features need to be changed when defining a multi-leg patrol.

Date and time of patrol split

Date of split : **Today's date**

Time of split : **Time the group split into two after the first leg**

Date groups rejoined : **Today's date**

Time groups rejoined : **Time the group rejoined for the last leg**

Settings - Group A

Transportation type : **Foot**

Members : **Include only the members of the group on this leg**

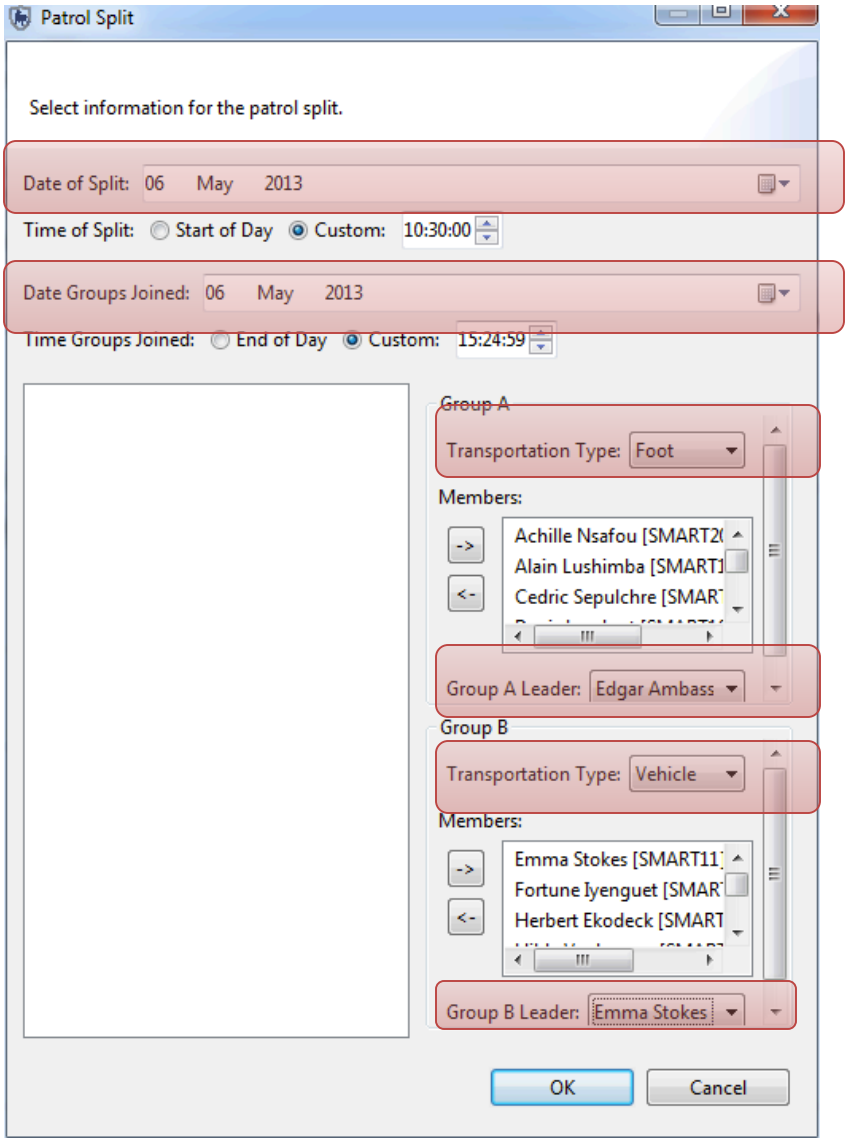
Group A leader : **Select a leader**

Settings – Group B

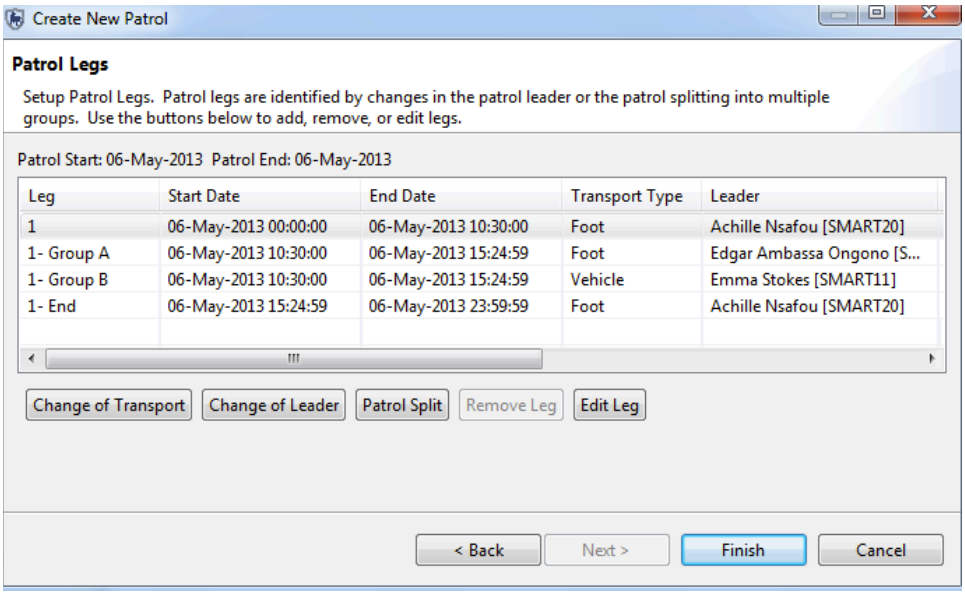
Transportation type: **Vehicle**

Members: **Include only the members of the group on this leg**

Group B leader : **Select a leader**

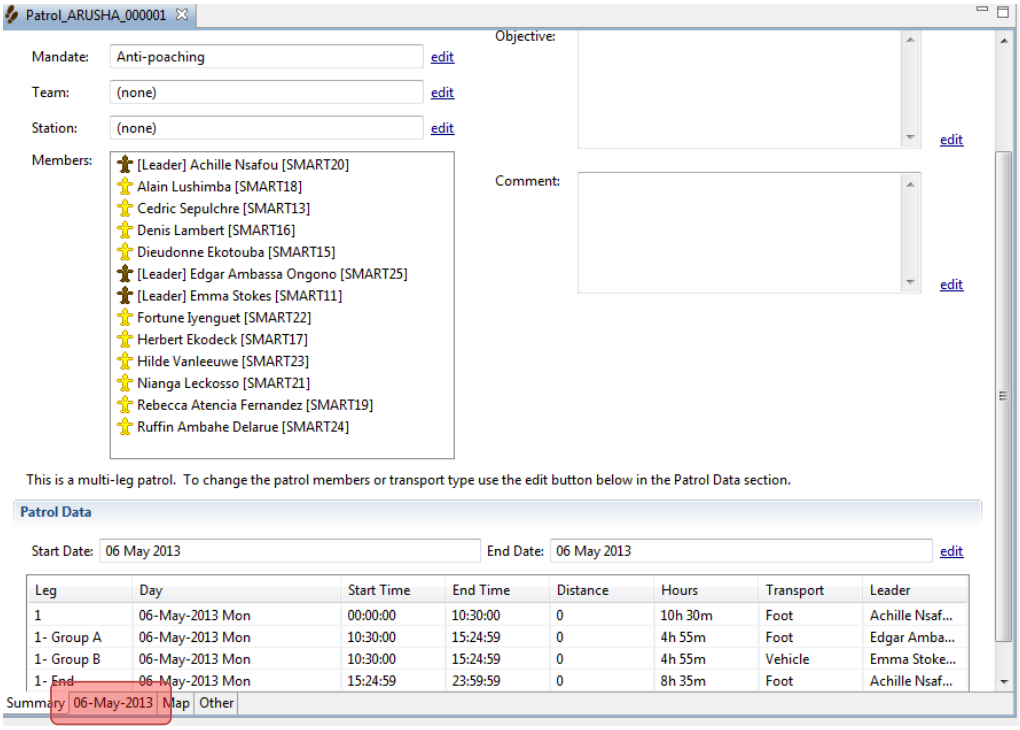


- Click **OK** when you have finished



- Click **Finish** to complete the multi-leg patrol

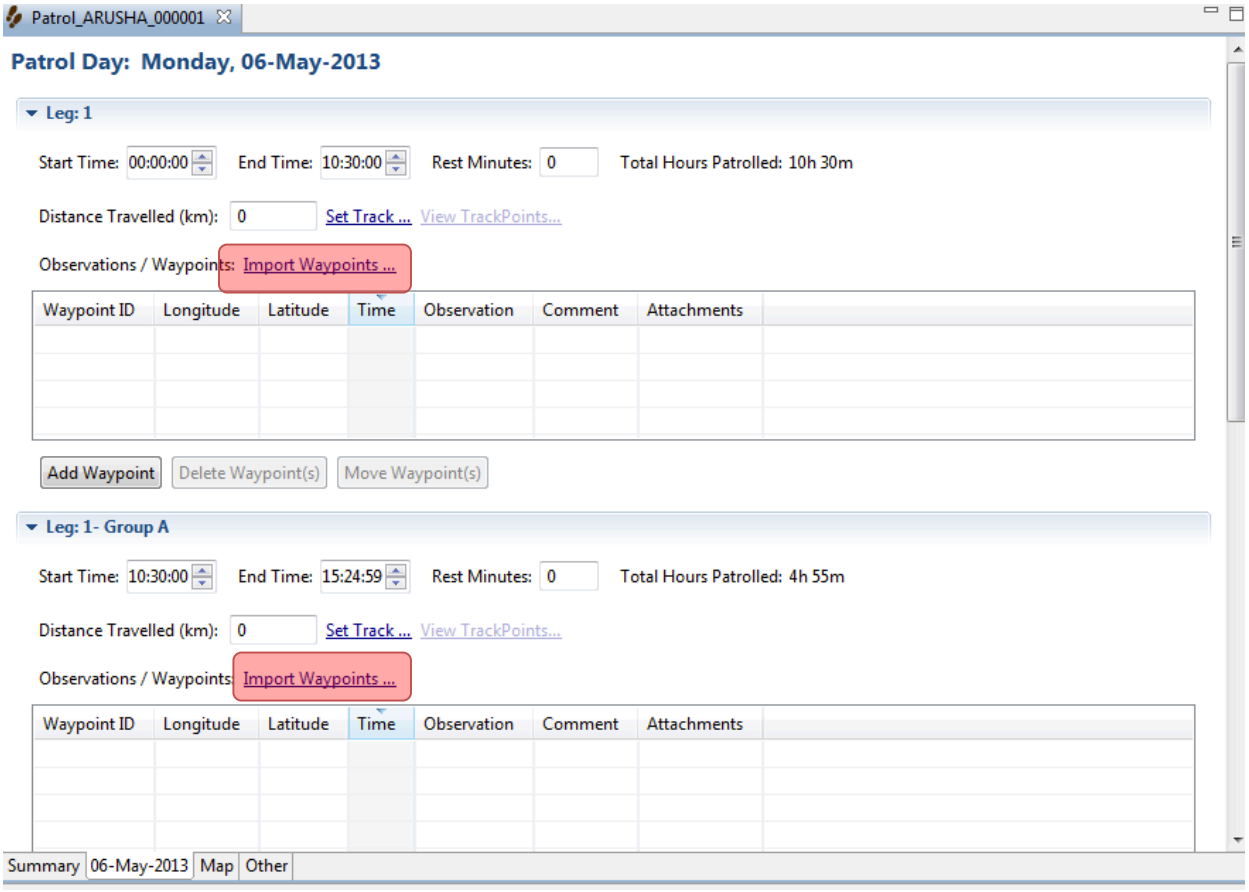
The summary screen of the patrol will allow for future edits, and also provides access to the tabs that bring up the waypoint and track imports.



- Click the tab **with today's date** to access the waypoint dialog.

After accessing the day where the multi-leg patrol took place, SMART will have two separate dialogs for importing waypoints, tracks and the related observations. The process to complete the observations for a multi-leg patrol would be the same as a regular patrol but you will need to populate each leg individually. In populating the last patrol you gained experience importing waypoints and creating observations.

***Note**: For multi-leg patrols you will just need to make note that all the sections would require waypoints and tracks to be imported separately.*



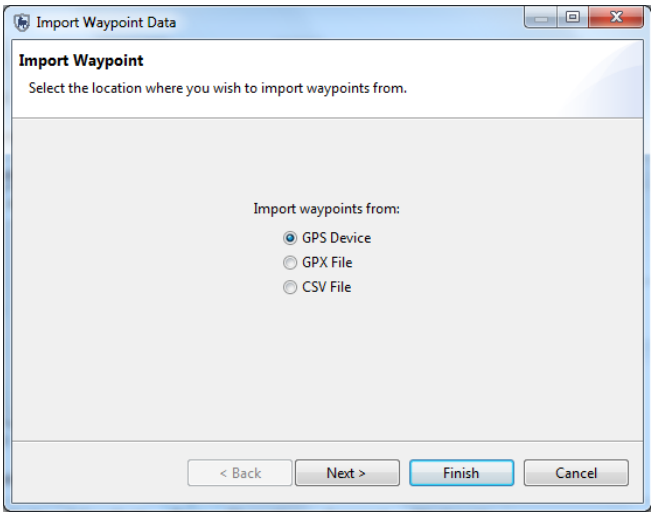
GPS Waypoint Import

The sections to follow will depend on which GPS device you are using. The immediate section is for users of the **Garmin 60CSx.** If you are using the Garmin **GPSmap 62** please refer to the section for that device. If your device is different than the two listed you should be aware of which section is appropriate for your GPS device.

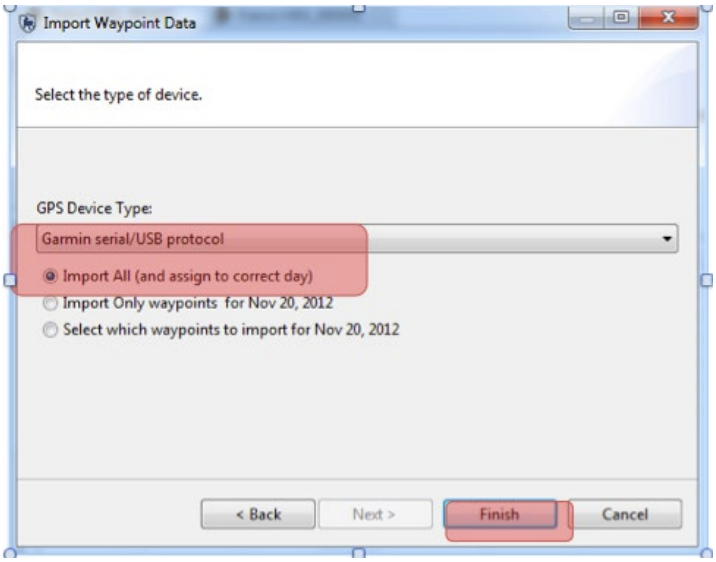
***Note**: GPS units that functions as a mass storage device should use the section for the Garmin GPSmap 62.*

Importing Waypoints using the Garmin 60CSx

This unit does not function like an external storage device. To access the waypoint and track information in the Garmin 60CSx, you will need to select **GPS Device**.



- Select **GPS Device**
- Click **Next**

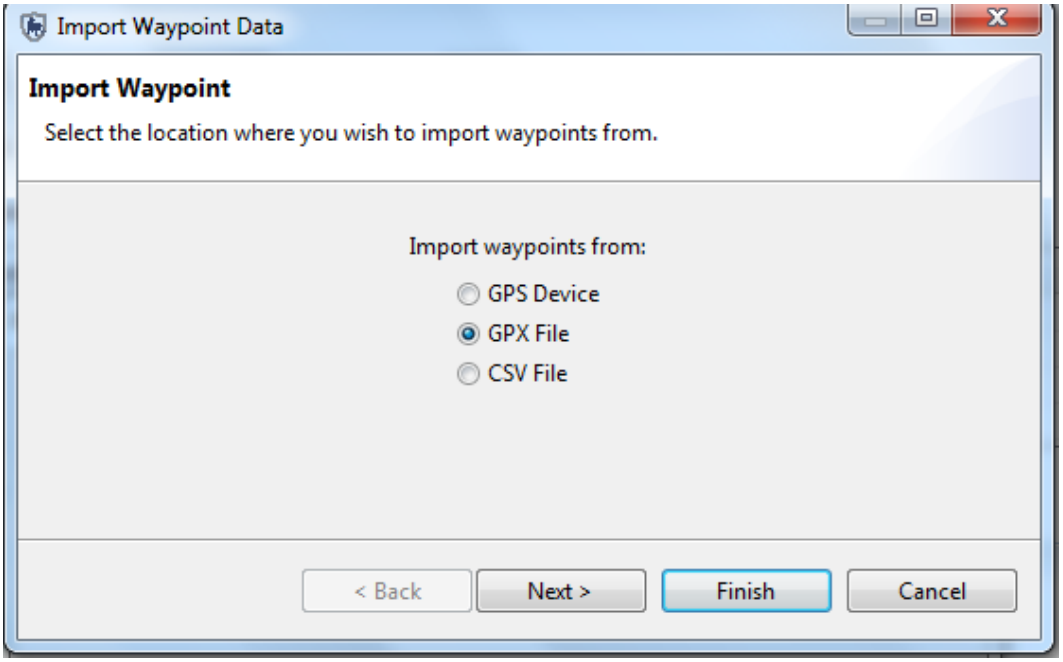


- Select **Garmin serial/USB protocol**
- Select **Import All (and assign to correct day)**
- Click **Finish**

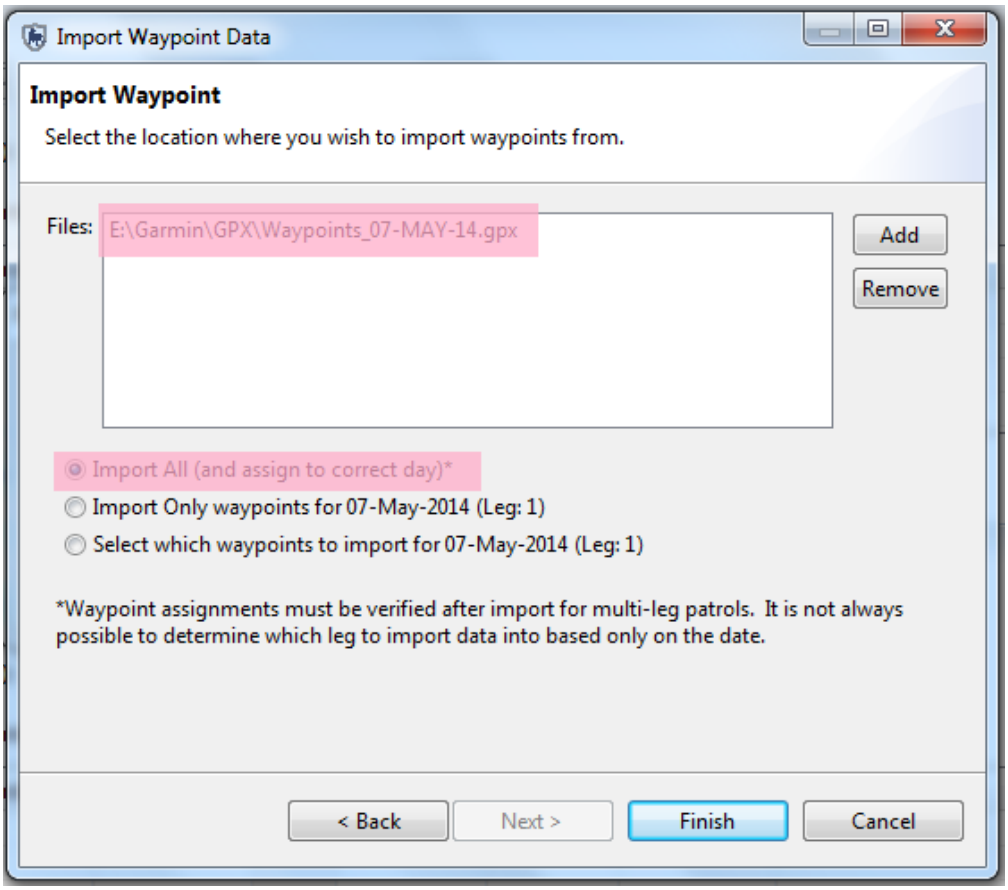
- Click **OK**

Importing Waypoints using the Garmin GPSmap 62

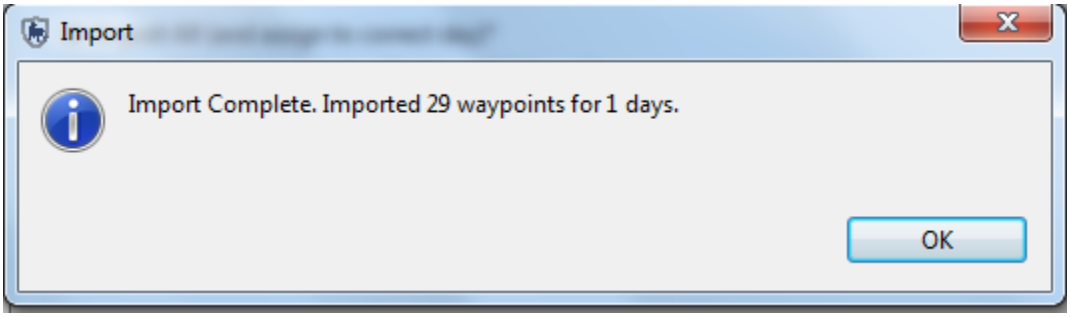
The Garmin GPSmap 62 functions a little differently than the Garmin 60CSx and requires a few more steps before the data can be imported into SMART. The Garmin GPSmap 62 behaves like an external storage device and requires you to select the **GPX File** option when importing waypoints.



- Select **GPX File**
- Click **Next**
- Click **Add**
- Browse to the folder on your GPS called **Garmin\GPX**
- Select the file **Waypoints_<today's date>.gpx**
- Click **Open**

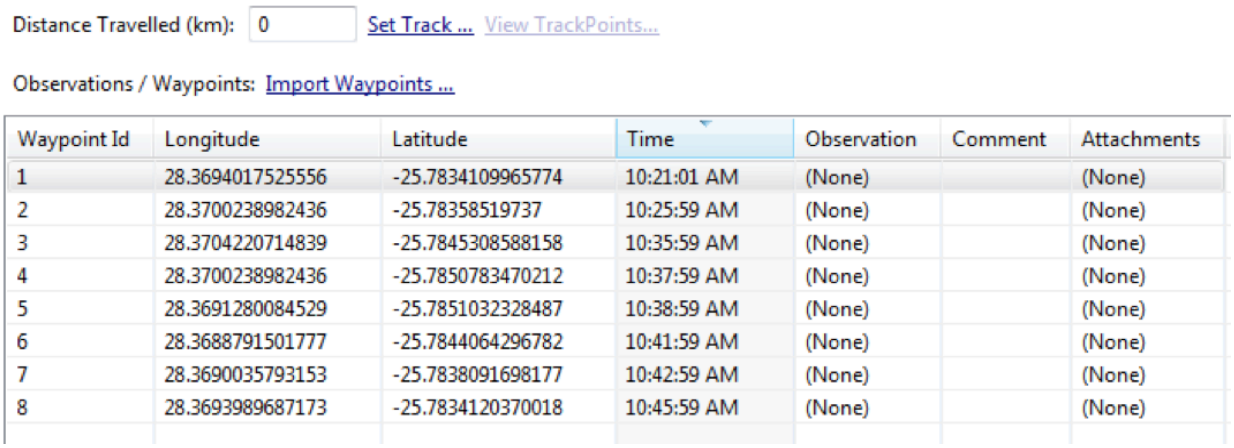


- Select **Import All (and assign to correct day)**
- Click **Finish**



- Click **OK**

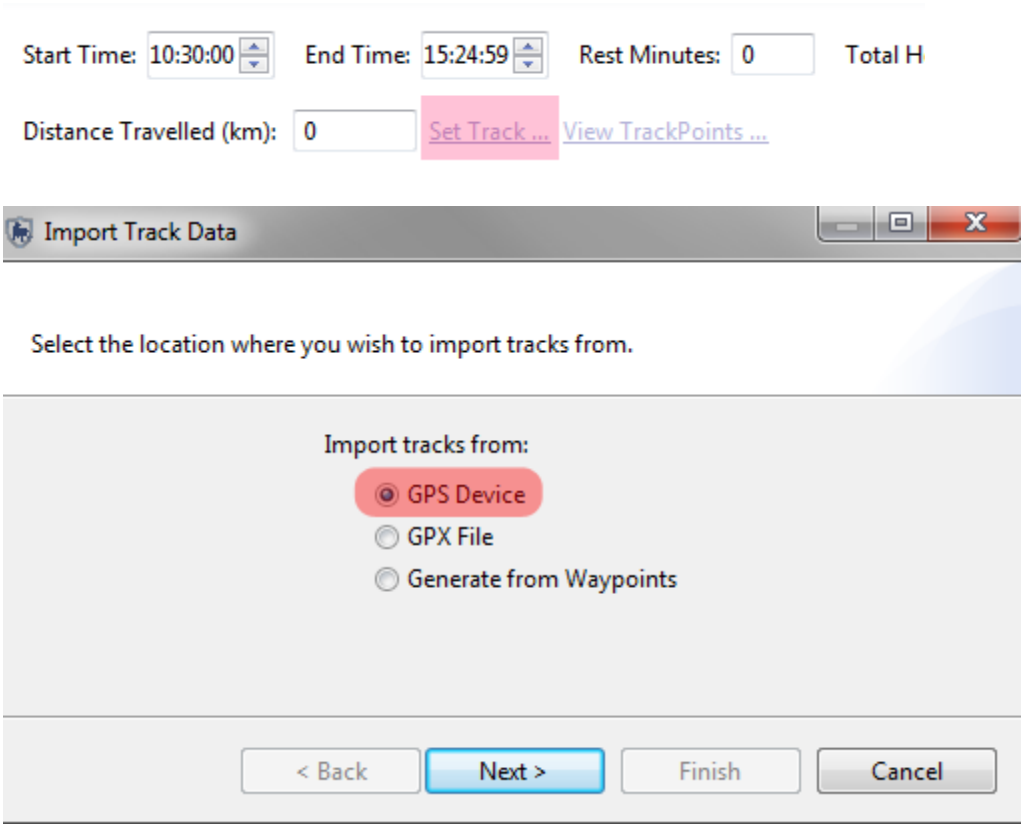
A successful import will bring up the all waypoints collected during the field exercise.



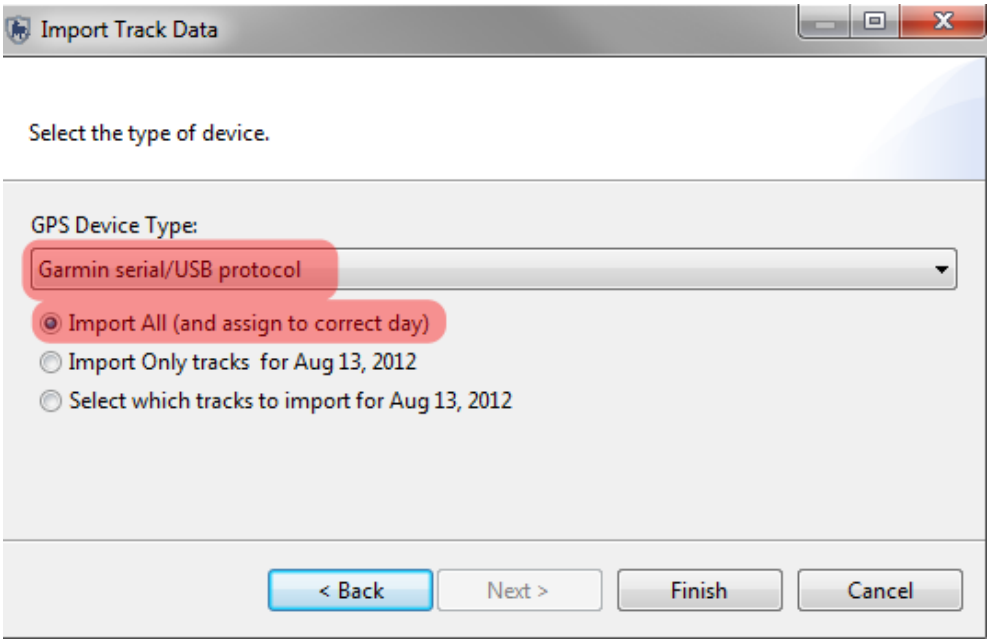
Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments
1	28.3694017525556	-25.7834109965774	10:21:01 AM	(None)		(None)
2	28.3700238982436	-25.78358519737	10:25:59 AM	(None)		(None)
3	28.3704220714839	-25.7845308588158	10:35:59 AM	(None)		(None)
4	28.3700238982436	-25.7850783470212	10:37:59 AM	(None)		(None)
5	28.3691280084529	-25.7851032328487	10:38:59 AM	(None)		(None)
6	28.3688791501777	-25.7844064296782	10:41:59 AM	(None)		(None)
7	28.3690035793153	-25.7838091698177	10:42:59 AM	(None)		(None)
8	28.3693989687173	-25.7834120370018	10:45:59 AM	(None)		(None)

Importing Tracks using the Garmin 60CSx

Now that the waypoints are in SMART, you will need to import the GPS tracks.



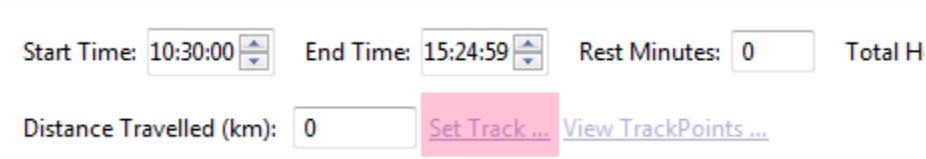
- Click **Set Track**
- Select **GPS Device**
- Click **Next**

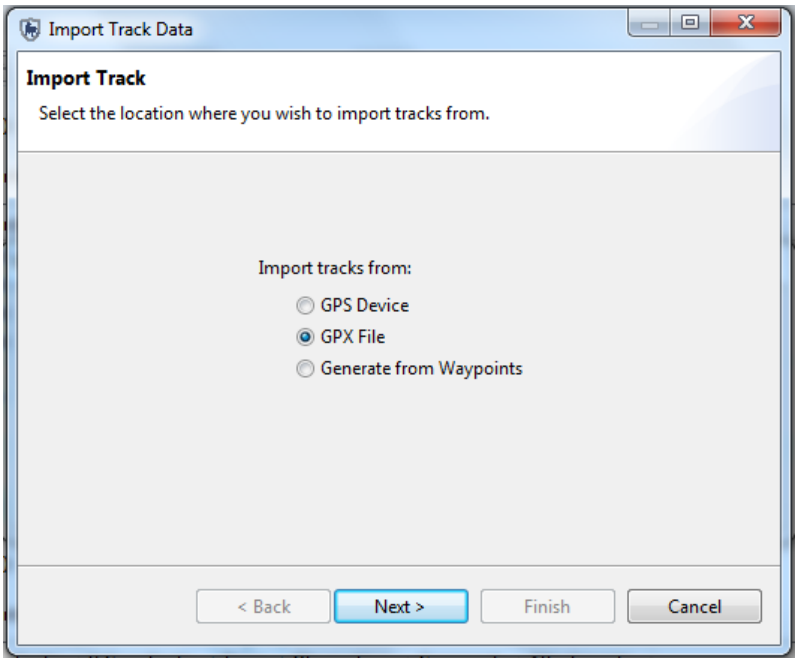


- Select **Garmin serial/USB protocol**
- Select **Import All (and assign to correct day)**
- Click **Finish**

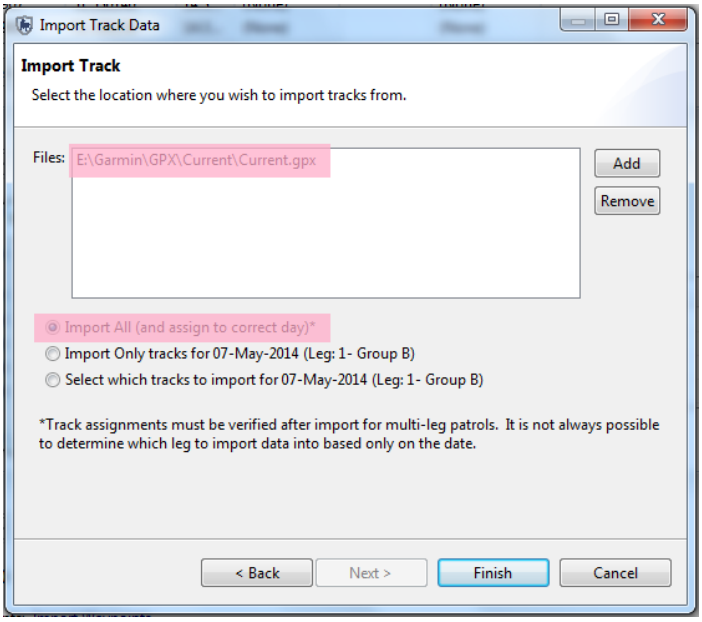
Importing Tracks using the GPSmap 62

Now that the waypoints are in SMART, you will need to import the GPS tracks.





- Click **Set Track**
- Select **GPX File**
- Click **Next**
- Click **Add**
- Browse to the folder on your GPS unit called **Garmin\GPX\Current**
- Select the file **current.gpx**
- Click **Open**



- Select **Import All (and assign to correct day)**
- Click **Finish**

Entering Observations for Waypoints

The next step of the exercise is to populate the waypoints with observations, within SMART.

You will now use your field notes to populate the patrol data with the correct observations.

Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments
1	28.3694017525556	-25.7834109965774	10:21:01 AM	(None)		(None)
2	28.3700238982436	-25.78358519737	10:25:59 AM	(None)		(None)
3	28.3704220714839	-25.7845308588158	10:35:59 AM	(None)		(None)
4	28.3700238982436	-25.7850783470212	10:37:59 AM	(None)		(None)
5	28.3691280084529	-25.7851032328487	10:38:59 AM	(None)		(None)
6	28.3688791501777	-25.7844064296782	10:41:59 AM	(None)		(None)
7	28.3690035793153	-25.7838091698177	10:42:59 AM	(None)		(None)
8	28.3693989687173	-25.7834120370018	10:45:59 AM	(None)		(None)

- Start by clicking on the **icon** in the upper right of the observation cell for waypoint 1 to activate the observation form.
- Enter the observations from your data sheet
- Follow steps in Module 3.

<End of Module 3 – Patrols>

Module 4 – Analysis: Queries and Summaries

Objective

This Training Module will introduce you to the Queries Perspective in SMART. This feature in SMART is a powerful tool that lets the user perform a wide variety of different analyses. In this training module we will look at the following functionality:

- **Creating a simple query using patrol filters**
- **Understanding and using the query wizard**
- **Creating compound queries using patrol filters**
- **Creating queries using data model filters**
- **Creating queries using spatial filters**
- **Understanding & changing query properties**
- **Saving & deleting queries**
- **Exporting & importing queries**
- **Creating simple summaries**
- **Creating complex summaries**
- **Creating gridded queries**

Detailed Steps:

In this Module you will start exploring some very powerful functions that allow for simple or complex queries and summaries to be developed and exported. Queries and summaries are tools used to extract patrol and observation information from the database. They each produce their own type of results and have different workflows to produce those results.

Definitions

Query

A query displays raw records that are selected using filters. No summarizing (totals, etc.) is done. This allows users to view the raw patrol and observation data. Queries can be viewed in tables or on a map.

Example: Show me all waypoints for Patrol ID 102

Patrol ID	Patrol Leg	Patrol Date	Time	Observation Type
102	1	Nov 3, 2011	9:34	Human Activity
102	1	Nov 3, 2011	10:23	Animals

All Data Queries

Query all observation data sources in the database (including patrols, independent incidents or observation data from other plugins). Only data model items are available for filters and summary options.

- **Patrol Query** - Returns the patrols that were involved in the particular query. No observation information is retrieved from the database.
    - **Patrol Observation Query-** Returns all the patrol attributes as well as all the data model categories and attribute information associated with the observation.
    - **Patrol Incident Query-** Returns all the patrol attributes associated with the incident as well as the incident location and time details
- **Observation Query** - Returns the observations that were involved in the particular query.
- **Incident Query**- Incident filters will return all observations at any incident that matches the filter.
- **Gridded Query (All Data Gridded Query or Patrol Gridded Query)**– Spatial query that returns the observation or patrol effort values in the form of a grid.

Summary

A summary provides an overview of the raw data and allows for grouping into different categories. Items that can be summarized are values such as total number of patrols, the total distance travelled, the total number of snare observations, etc. Groupings are categories such as management sectors, patrol types, patrol mandates, stations, teams, etc. Summaries can only be viewed as tables.

Example: Show me the total number of snares observed in each management sector for each of the last 6 months.

	January	February	March	April	May	June
	# of Snares	# of Snares	# of Snares	# of Snares	# of Snares	# of Snares
Sector A		7	6		3	
Sector B	15	10	2	19	5	3

Query Components

A SMART query is a logical expression used to filter the entries in the database.
SMART Filters include:

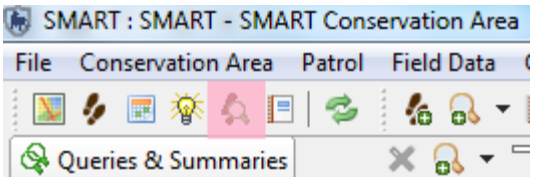
- Date
- Patrol
- Data Model
- Area

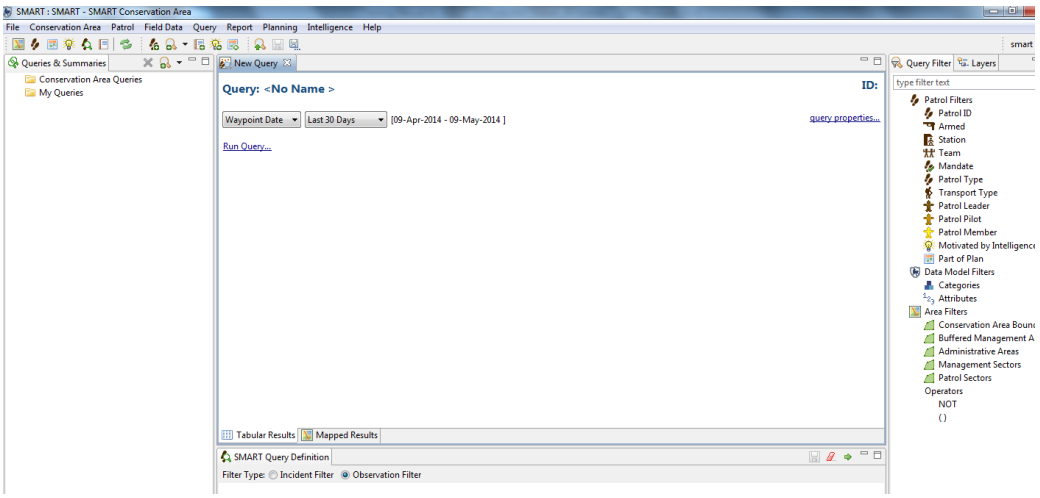
Operators are used to alter the logic of the query to allow SMART users to be able to build more complex queries.
Operators include:

- AND
- OR
- NOT
- Brackets: ()

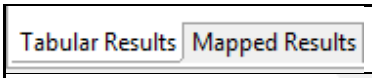
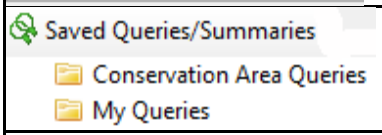
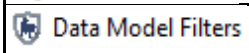
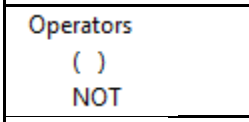
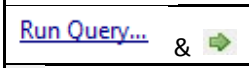
- Contains
- Not Contains
- Equals: =
- Less Than: <
- Greater Than: >
- Less Than or Equal to: <=
- Greater Than or Equal to: >=
- Less Than or Greater Than (Not Equal to): <>

- Click on the **Query Perspective** icon





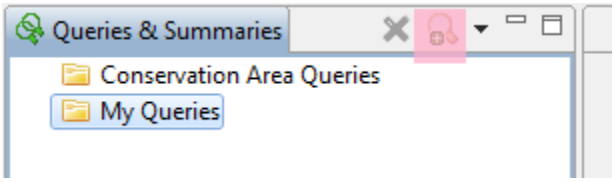
Date: Waypoint Date Last 30 Days	Filters the date of the query
Query: <No Name Query>	Used to change the name of the query
query properties...	Changes the name of the query. Filters the fields returned in the query results

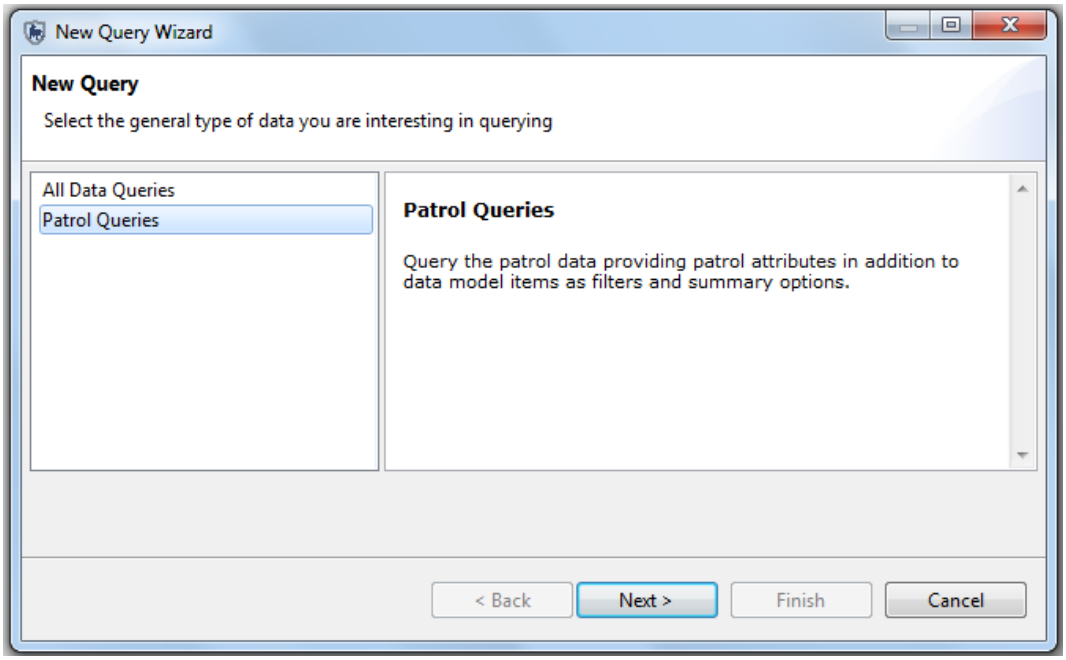
	Switches between tabular results and mapping results
	Folders of saved queries
	Used to filter the results based on patrol information
	Used to filter the results based on categories and attributes in the data model
	Used to filter the results based on the spatial boundaries of the Conservation Area
	Operators of NOT and Brackets () used to change the logic of the query
	Launches the query
	Clears the query
	Saves the query

Creating a Simple Observation Query Using Patrol Filters

For this example, you will build a simple query to extract which observations were made by a specific team. In the exercise you will use the New Query Wizard which will help guide the user on which query should be used to extract the information that is needed.

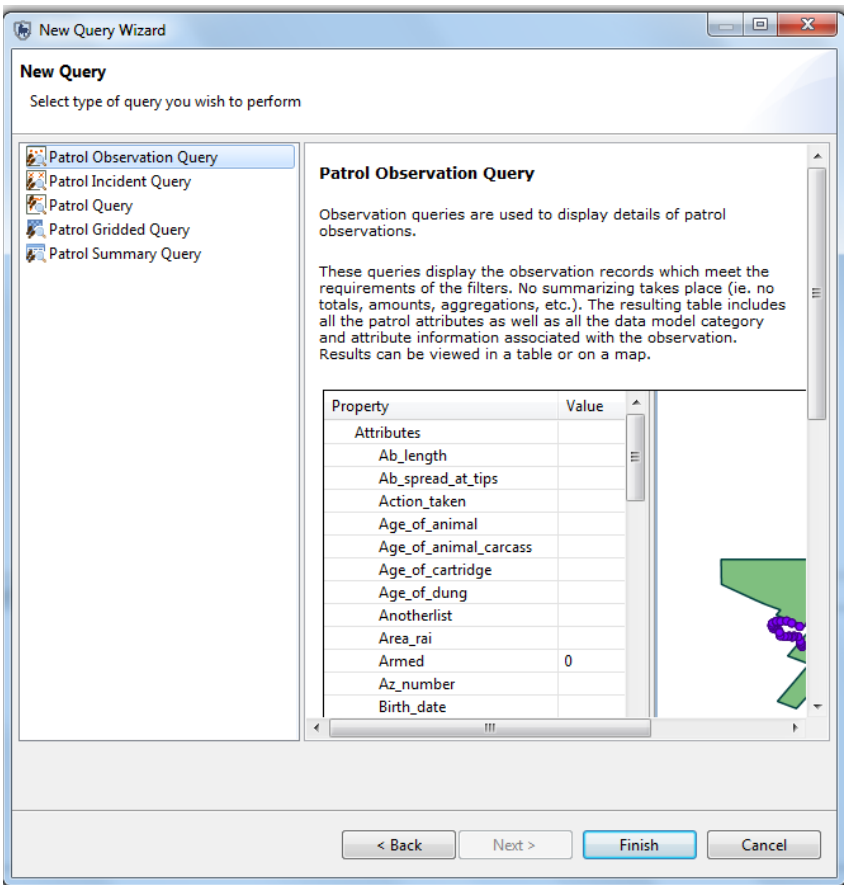
- Click on the **Create a new query** icon to open the New Query Wizard



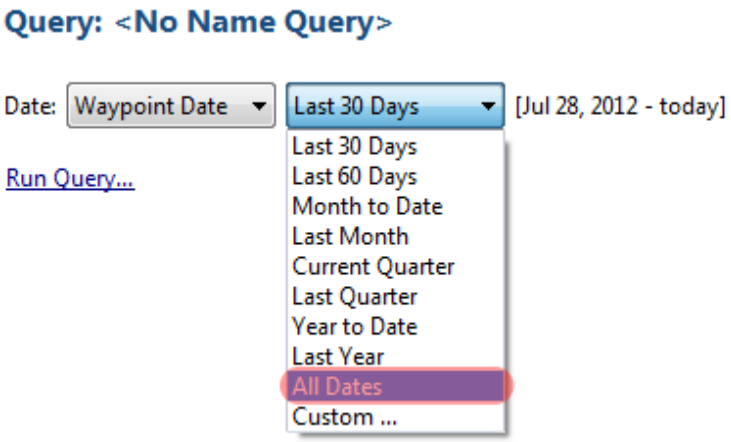


- Select **Patrol Queries** and click **Next**

You can now select the type of query you wish to perform. When you click on a query type a description of that query appears.



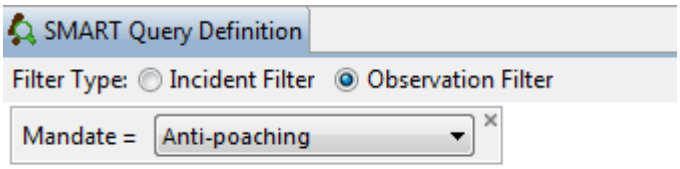
- Select **Patrol Observation Query**
- Click **Finish**



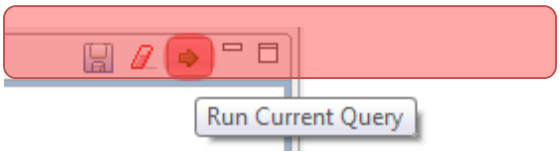
- In the main query window change the date setting to **All Dates**

***Note**: The default for the query dates are for the last 30 days. For these exercises you should change the setting to **All Dates** unless instructed otherwise.*

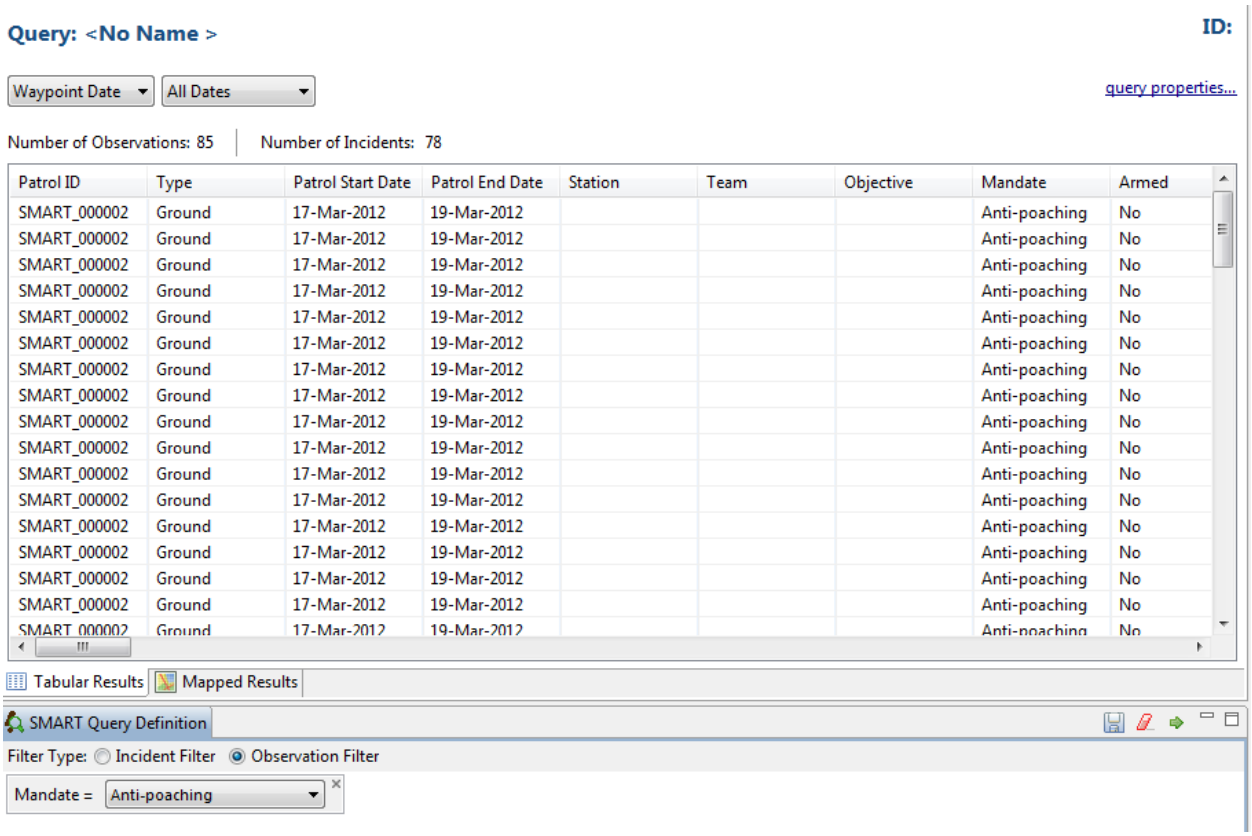
- To start building the query, double-click on **Mandate** under Patrol Filters on the right-hand bar, it will then appear under SMART Query Definition in the lower window
- Make sure that **Observation Filter** is selected under filter type



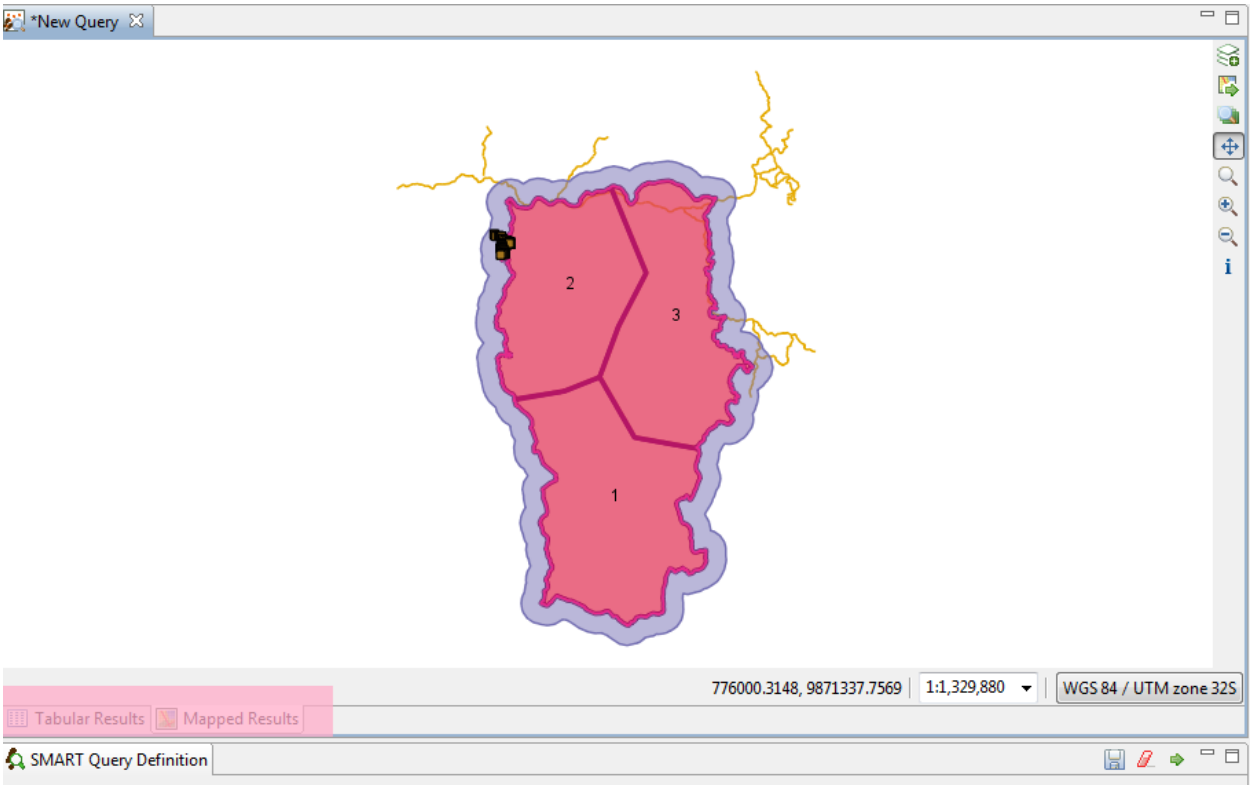
- Select **Anti-poaching**



- To the right of the lower window, click on the green arrow to **Run Current Query**



You can see query results as either a TABLE or MAP

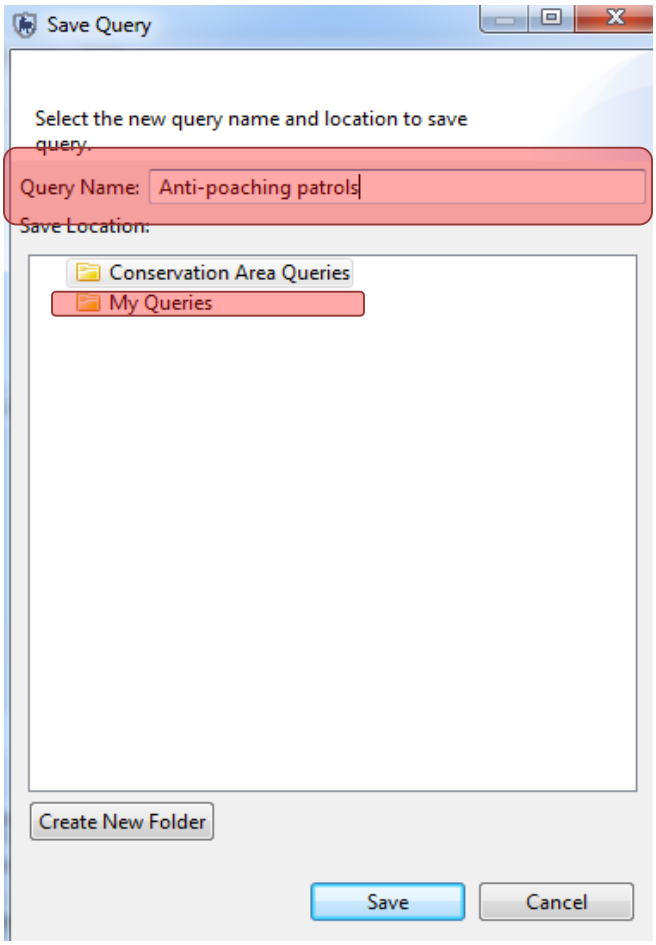


- To switch between **Tabular** and **Mapped** results, click on the two tabs shown

***Note**: The process of customizing the map's appearance and settings are the same in the Mapped Results windows as in other windows.*

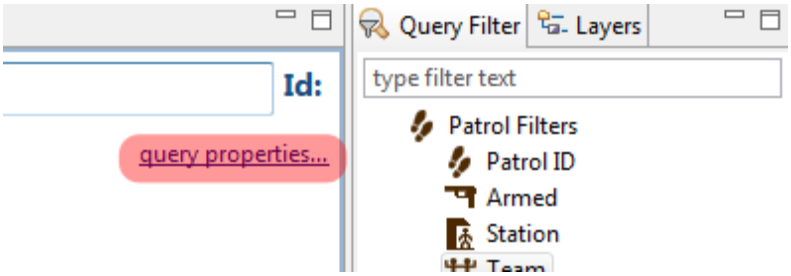
Saving a Query

- Click on the icon **'Save As'**

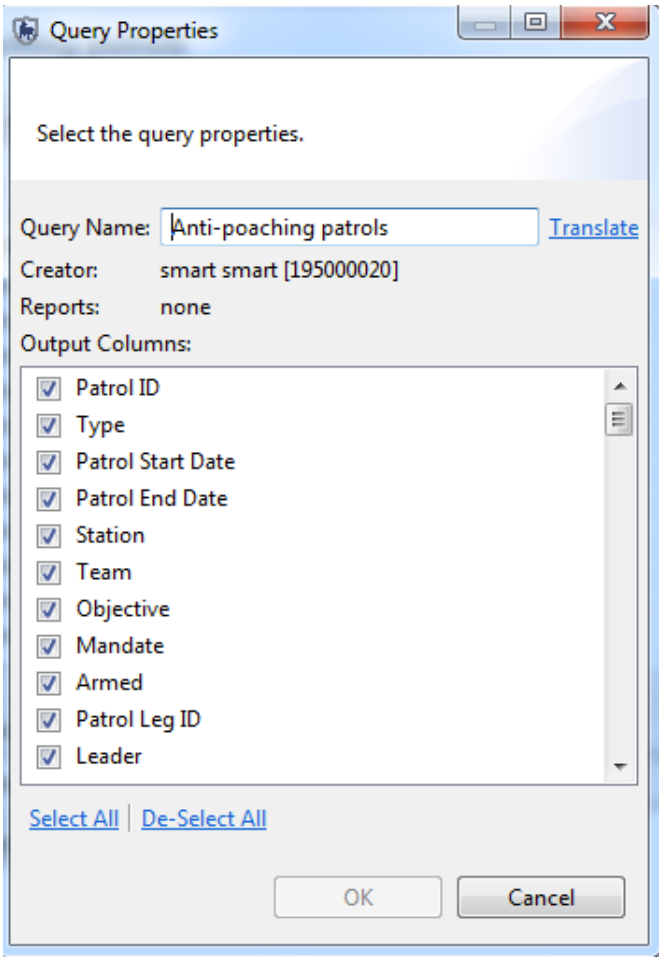


- Enter **Anti-poaching patrols** as the Query Name
- Select **My Queries**
- **Save**

Query properties



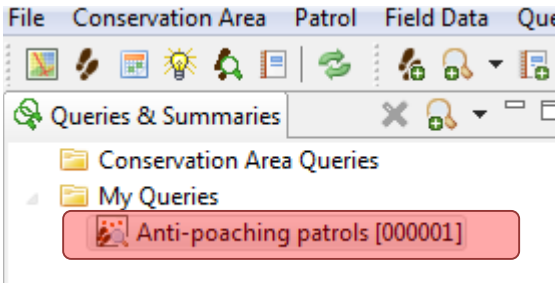
- Click on **query properties…..*(Note: You need to be on the tab: Tabular results)***



- You can select/de-select the fields you want to display in the query table
- When you're finished click **OK**

- **Save any changes**

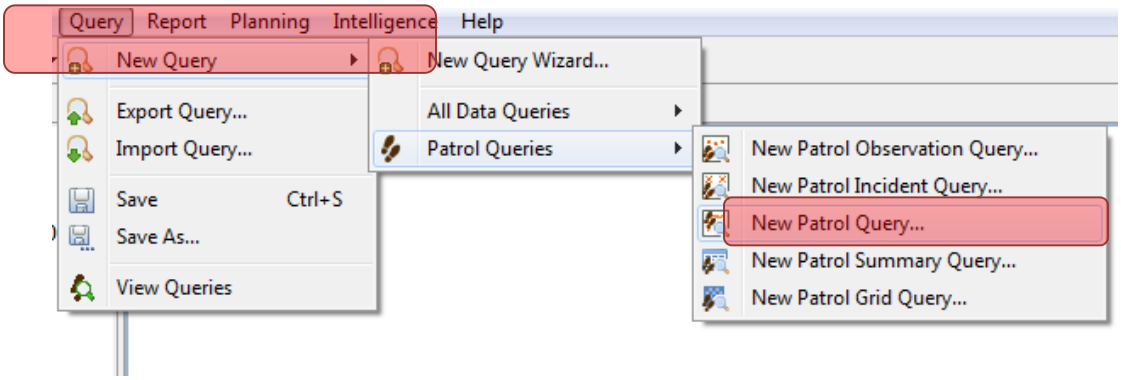
You'll now see 'Anti-poaching patrols' under My Queries in the Saved Queries/Summaries tab.



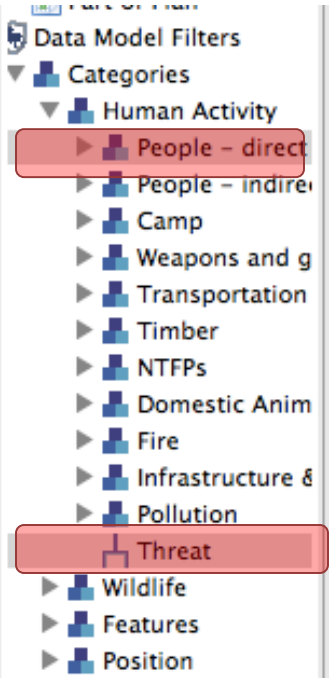
Patrol Query

Now we will run a basic Patrol Query which displays the patrols that match the given query filters. The process of building a Patrol Query is the same as the Observation Queries but the results will return which patrols were involved and not the individual observations.

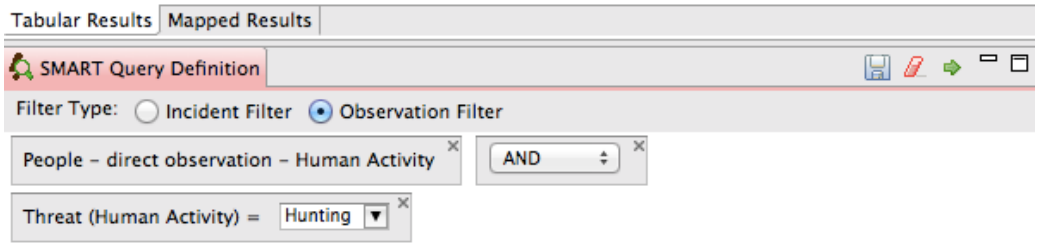
For this query you will build a query to see which patrols were involved in an encounter with poachers.



- Select **Query – New Query – Patrol Queries - New Patrol Query …**
- Select **All dates**
- Save query as **Poacher encounters** under **My Queries**

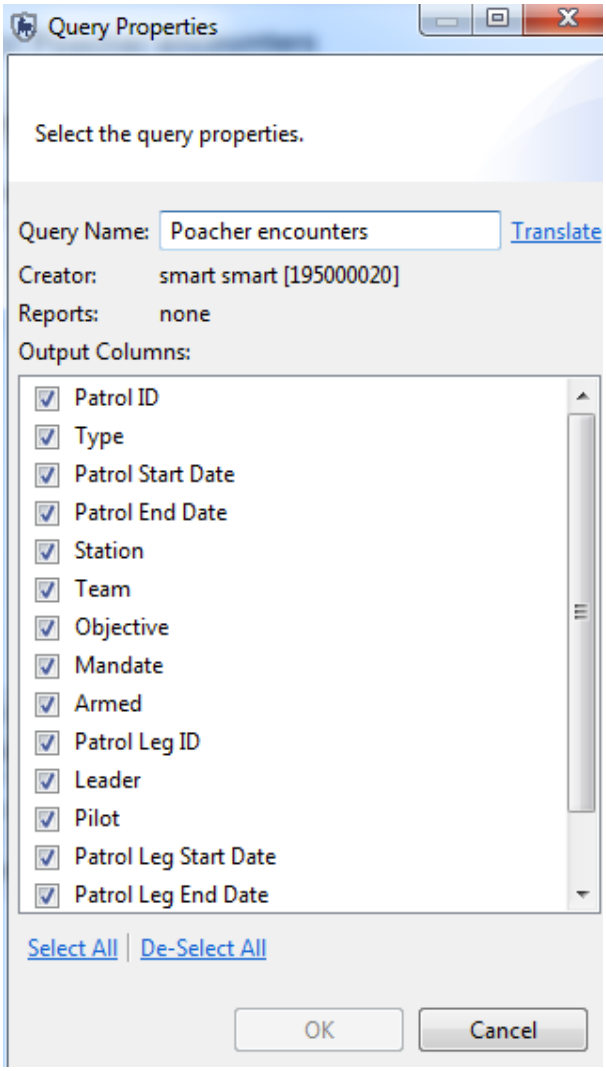


- Using the query filters, double-click under Categories on **People – Direct observations**
- Double-click on **Threat** and select **Hunting** in the query window

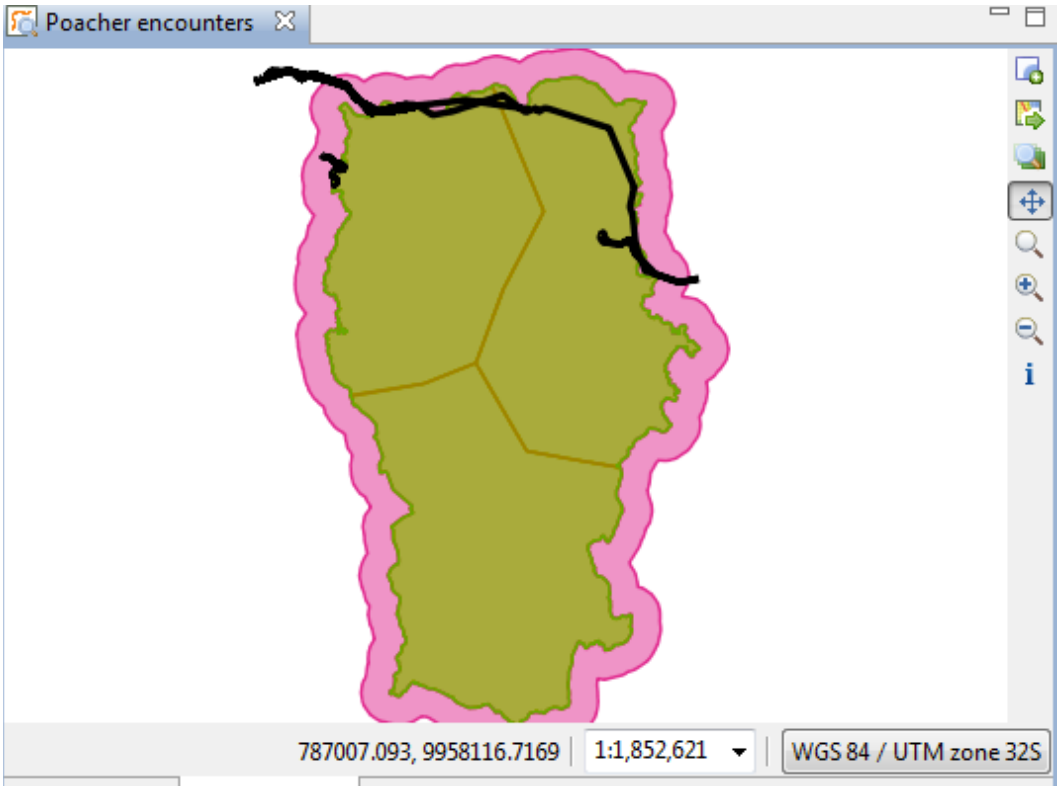


- Run the Query

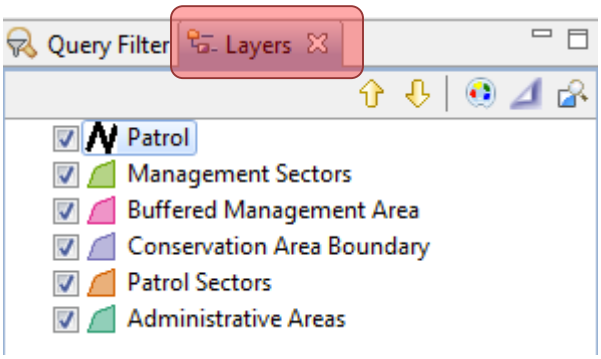
In the Query Properties for a Patrol Query you will see that the available fields are fields related to the patrols and not of the observations.



In the Mapped Results view, the Tracks of the various patrols are returned and mapped. No waypoint information is returned.



***Note**: Your results will likely not show the patrol tracks as a thick black line. The color and thickness of the line can be edited using the same tools as the other layers (by selecting the Layers tab on the right-hand side)*



Conservation Area Queries and My Queries

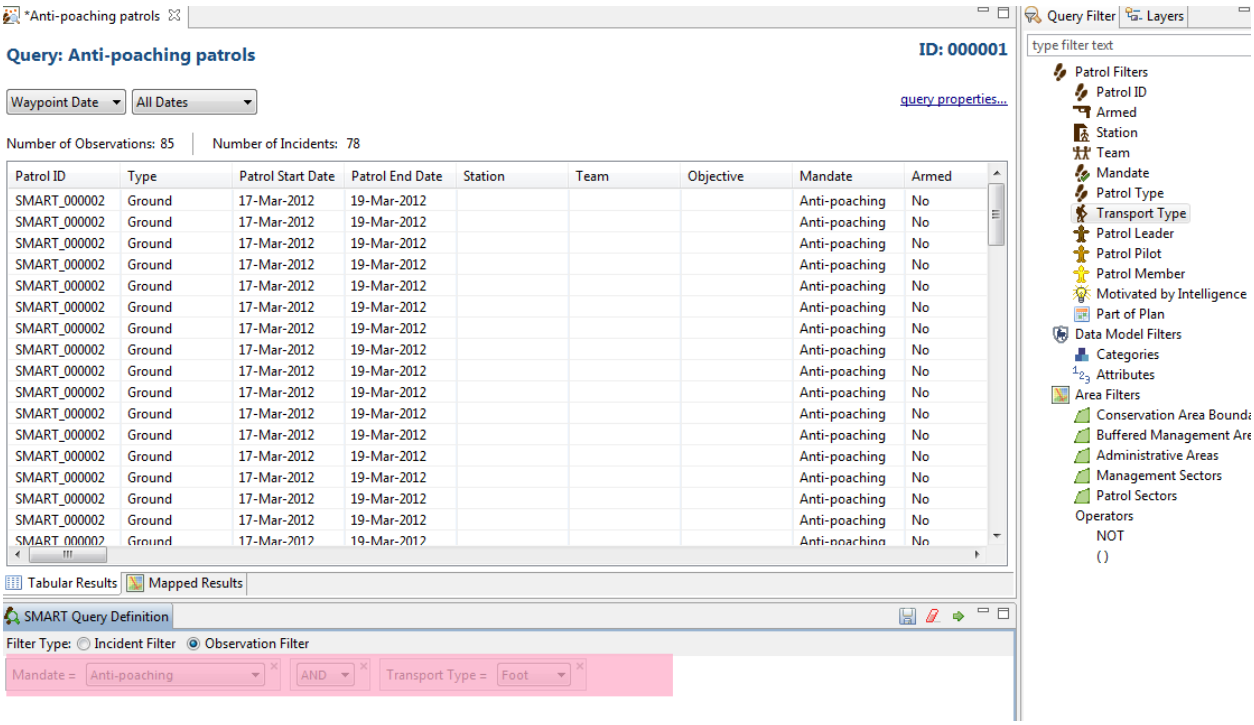
The two base areas to save queries are Conservation Area Queries and My Queries.

- **Conservation Area Queries** - Accessible by all user accounts except for Data Entry, but only Admin and Manager user levels can save and make edits.
- **My Queries** - Accessible only by the user account that created them. All accounts except for Data Entry can save and make edits.

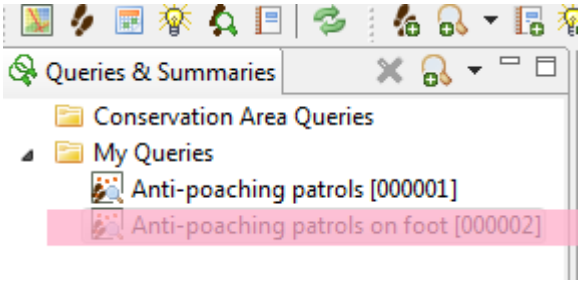
***Note**: Queries and Summaries saved under My Queries will only be accessible to Reports saved under My Reports. Queries and Summaries saved under Conservation Area Queries will only be accessible to anyone generating a report. (Note: Reports will be covered in Module 5).*

Creating Compound Queries using Patrol Filters

In the previous example, you extracted all observations made on Anti-poaching patrols. For the next example, you will create a compound query to further filter the results by finding only the patrols which were done on foot.



- Double-click on **Anti-poaching patrols** to open that query
- Double-click **Transport Type** in the Query Filter window on the right to add it to the query.
- In the **Transport Type** drop-down list, select **Foot**
- Select **All dates**
- **Run the Query**



- Save a copy of the Query as **Anti-poaching patrols on foot**

- Save under **My Queries**

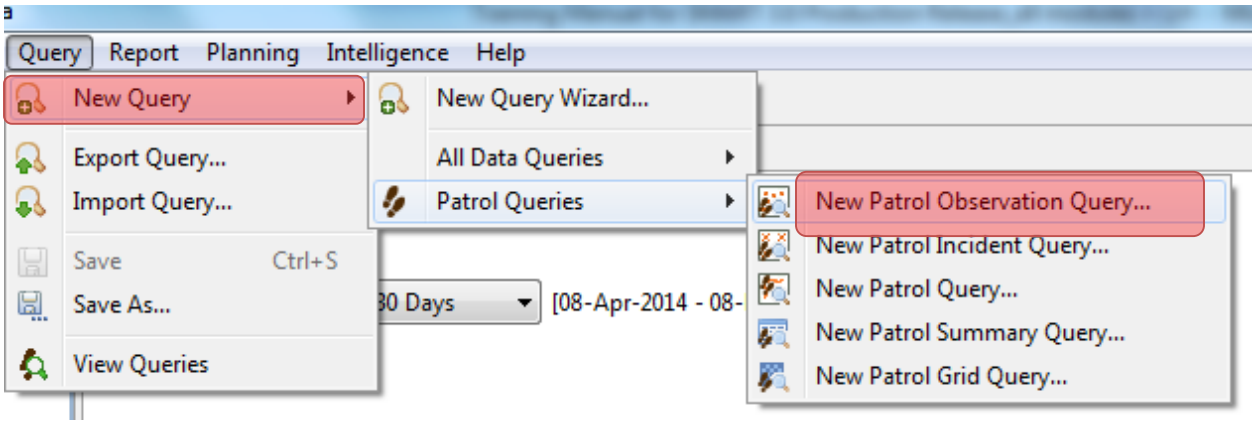
Creating a Simple Patrol Observation Query Using Data Model Filters

Queries created using the Data Model Filters allow for specific information about observations to be accessed. Data Model queries can be on specific attributes or based on categories that contain those attributes. If a category is chosen, all of the sub-categories and related observations for those sub-categories are also returned.

Using Categories

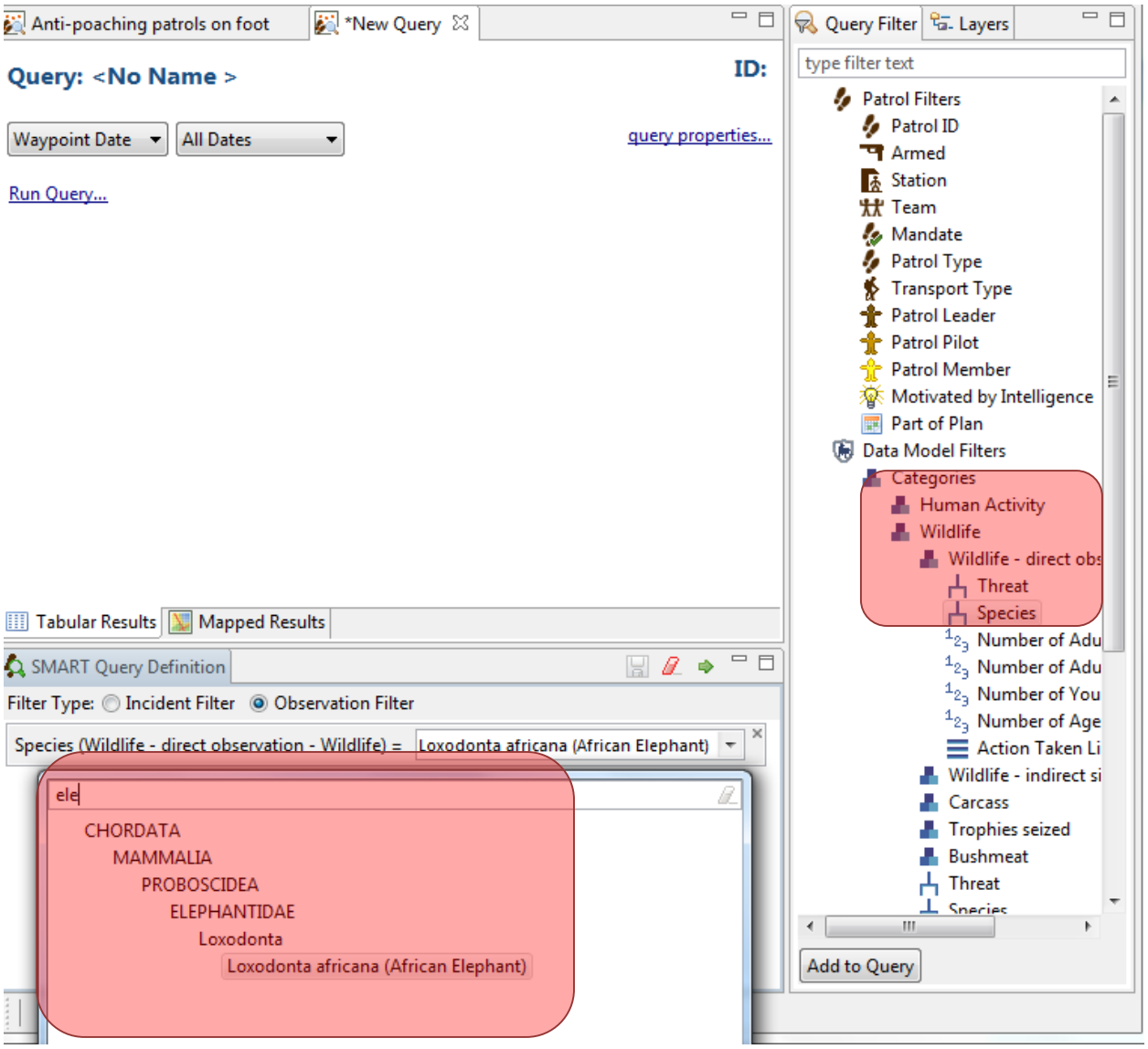
The next query will return all direct observations of elephants

- Select **Query – New Query – Patrol Queries - New Patrol Observation Query …**

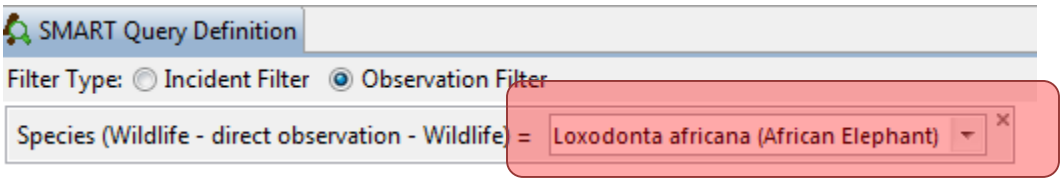


- Select **All Dates**

- In the Data model filters, Double-click on: **Wildlife – Direct Observation - Species**
- Enter '**elephant'** in the text filter window on Species



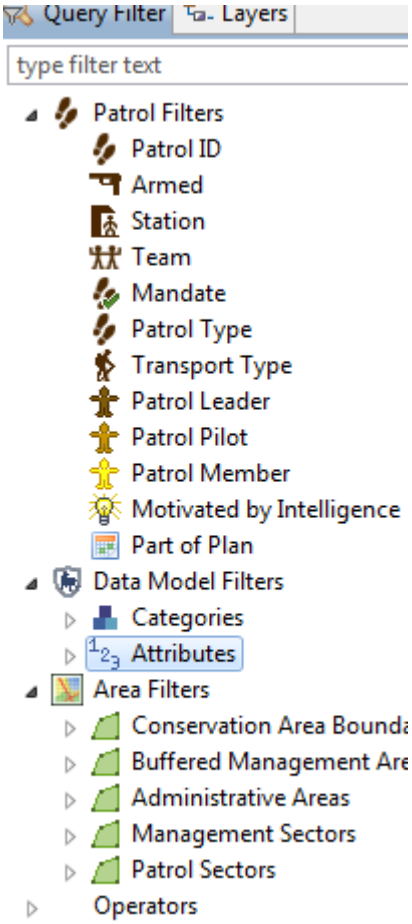
- Run Query
- Rename the query **Elephant observations** and save the query



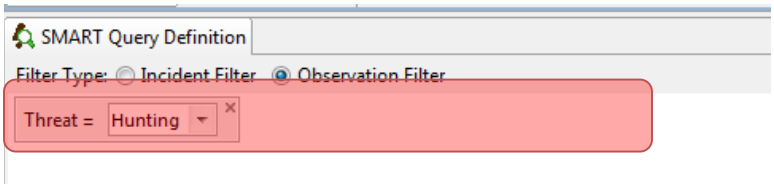
Using Attributes

Patrol Queries based on attributes will return results across all categories in the entire data model for any observation where that attribute value was used.

For this example, you will create a simple Data Model Attribute query to extract all observations where elephants were recorded (not just direct observations).



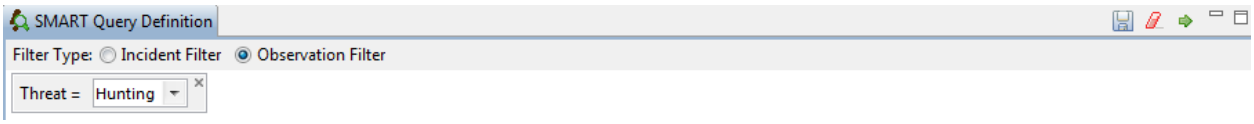
- Create a **New Patrol Observation Query**
- Save as **Hunting Observations** under My Queries
- Under Data Model – Attributes find and double-click on **Threat**
- Enter '**Hunting**' in the text filter



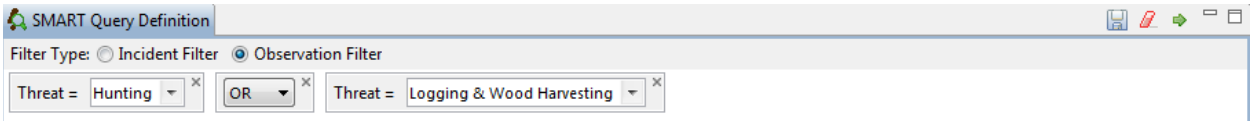
- Select **All Dates**
- **Run Query**
- In the **query properties**, select only
    - **Patrol ID**
    - **Observation Category 0**
    - **Observation Category 1**
    - **Species**
- **OK**
- Sort data by **Observation Category 1** by clicking on the column header

Compound Queries using Operators

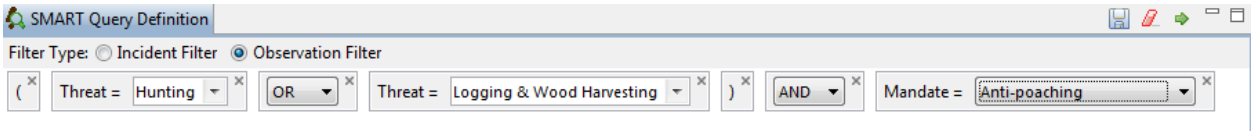
Using Operators allows for more complex queries to be built. The logic for Operators is the same in SMART as it would be when building a mathematical equation.



This query will return **only observations of hunting**



This query will return **both observations of hunting and observations of logging and wood harvesting**



This query will return observations of hunting or logging but only if they were made by Anti-poaching patrols

***Note**: Once components in the Smart Query Window have been included, they can be repositioned by dragging and dropping or removed by clicking the "x" in the upper right of the feature.*

Invalid Query

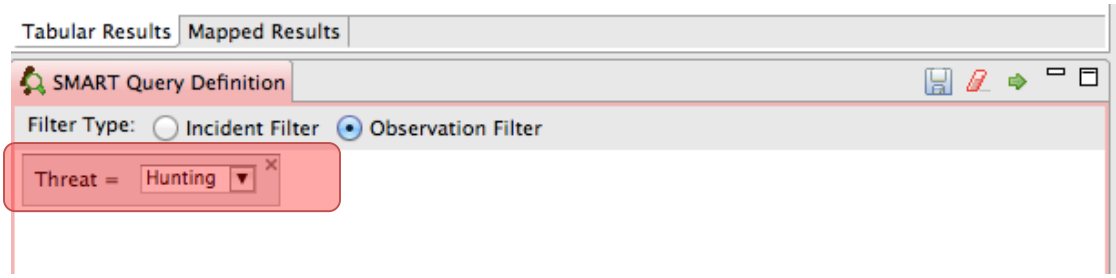
SMART will only allow valid queries to be run. If a query is incomplete or invalid, the green Run Current Query icon will be unavailable and there will be a Query error warning at the bottom of the screen.

Creating Queries using Area Filters

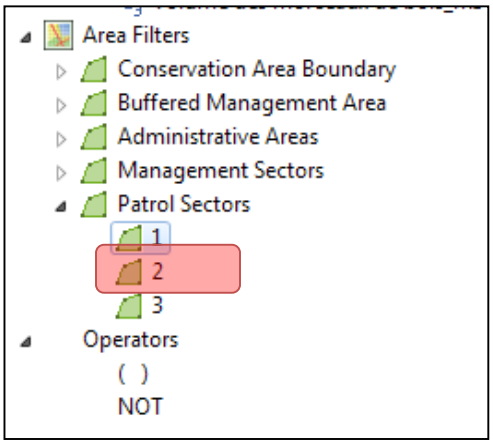
Area filters allow for results to be filtered using the administrative boundaries associated with the Conservation Area.

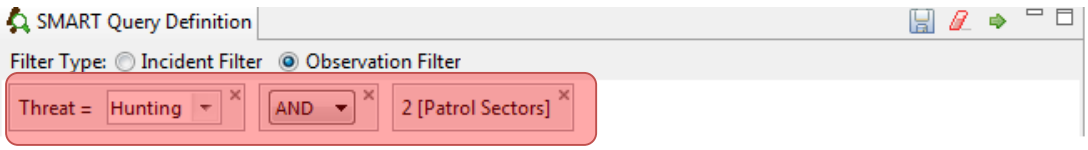
For this example, you will build an observation query to extract all hunting observations in Patrol Sector 1

- Create a **New Patrol Observation Query**
- Double click on **Threat** in the list of attributes
- Enter '**hunting**' in the filter text window
- Select **hunting** and click **Enter**



- Select **All dates**
- Run Query and view **Mapped Results**
- Now add the **Patrol Sector 2** to the Query





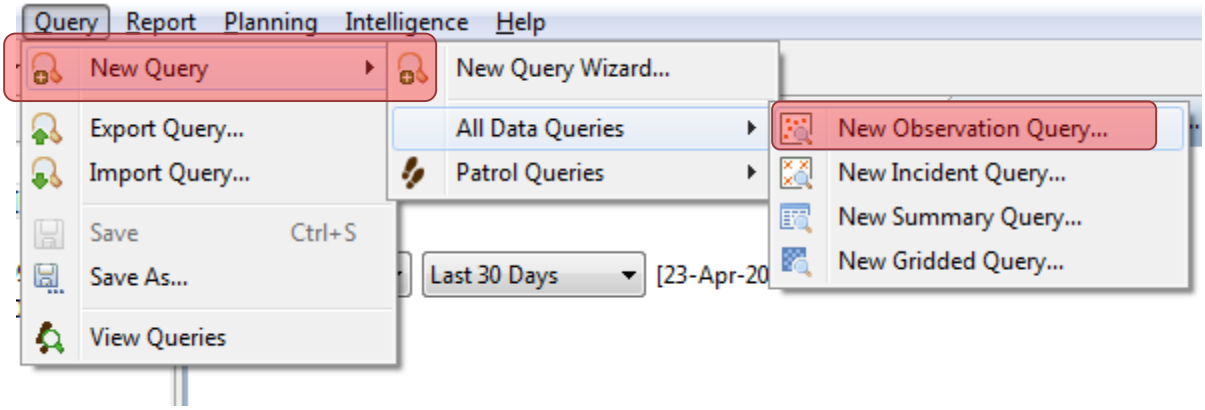
- Run the Query and view the results again under **Mapped Results**

***Note**: Only the observation in Patrol Sector 2 are returned*

Observation Queries

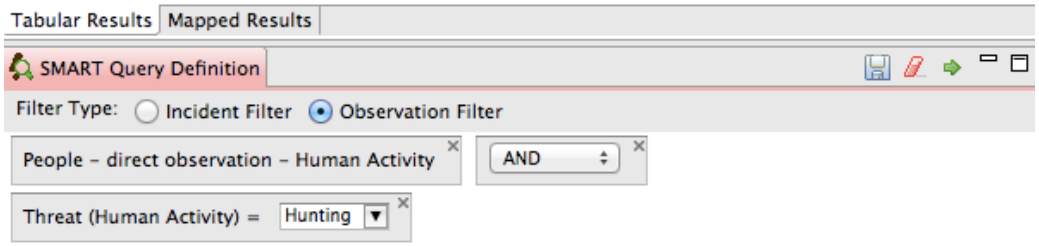
Up to this point, all queries have been Patrol Queries and the results returned are of the observations associated with patrols. The process of building an Observation Query is the same as the Patrol Queries but the results will only return individual observations.

For this query you will build a query to see observations where there was an encounter with poachers.



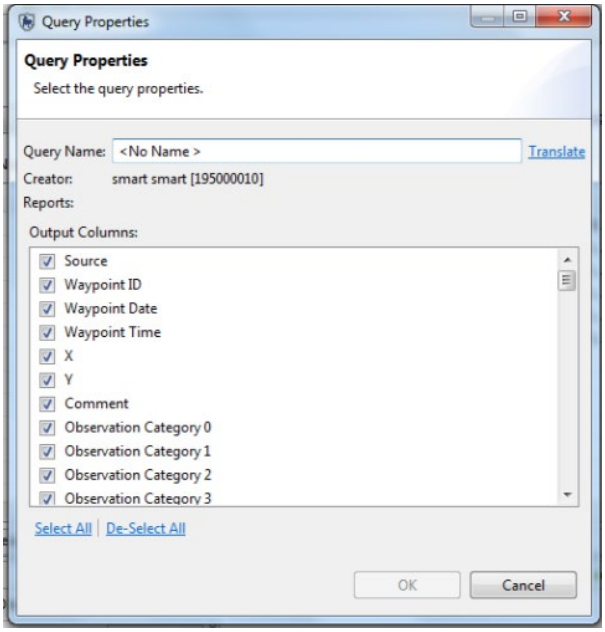
- Select **Query – New Query – All Data Queries - New Observation Query …**
- Select **All dates**
- Save query as **Poacher encounters** under **My Queries**

- Double-click under Categories on **People – Direct observations**
- Double-click on **Threat** and select **Hunting** in the query window



- Run the Query and review both the tabular results and the mapped results

In the Query Properties for an Observation Query you will see that the available fields are fields related to observations and not of patrols.

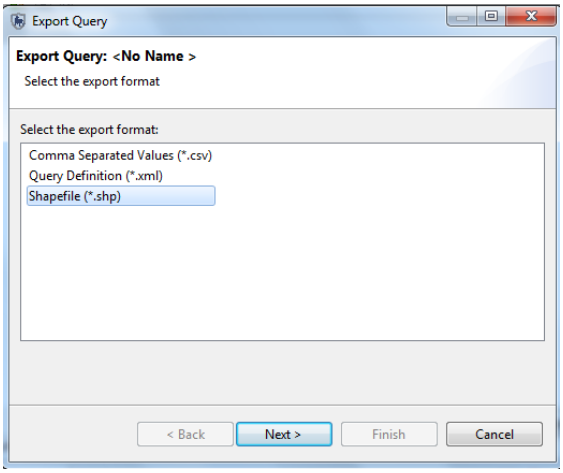


Exporting Query Results

Exporting results as a Shapefile ***Available only for queries and not summaries****

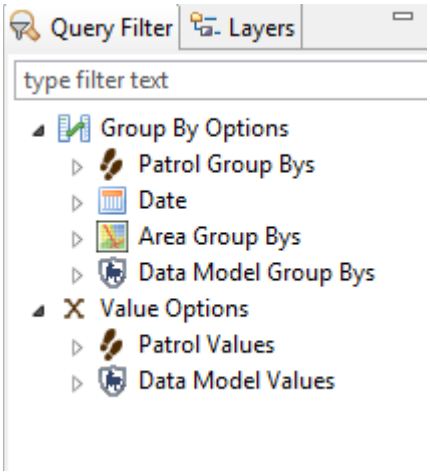
A query export of the file type Shapefile will produce a Shapefile of the results that are viewable in the Mapped Results tab. This Shapefile can be used for creating new maps or to distribute to others or to import into ArcGIS

- After running a query click on the Export Icon and select **Shapefile (*.shp)**
- Click on Next and save the shapefile in the Module 4 folder



Summaries

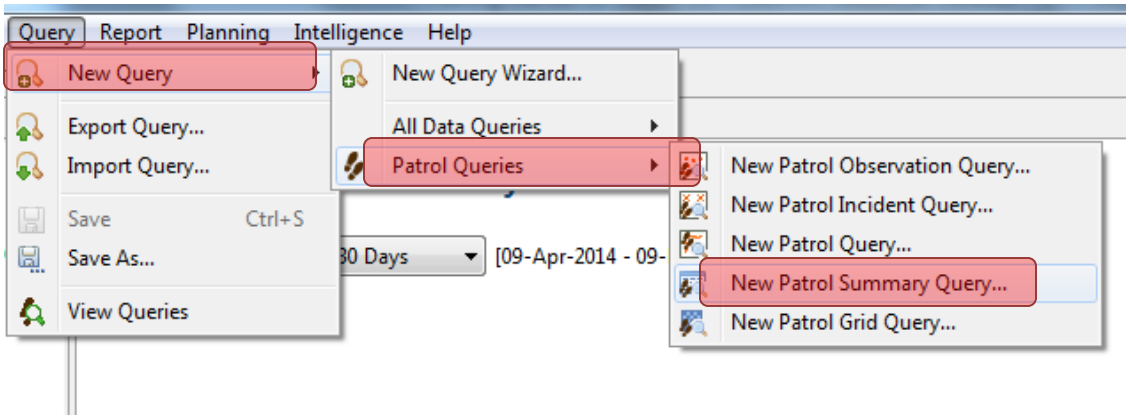
Summaries are built by placing Value Options and Group By Options into the Smart Query Definition windows. The Group By Options are used to provide an aggregation of the Value Options.



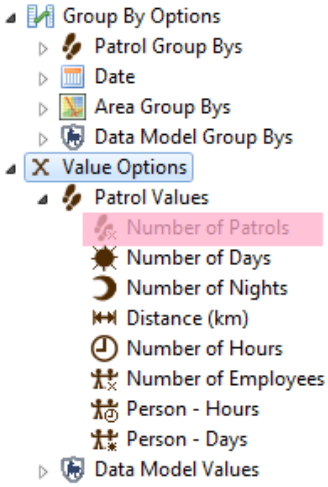
The simplest of Summaries can be a single Value Option with no Group By Options, and there is no end to how complex a summary can be. However, some combinations of Values and Group Bys are not permissible and SMART will not allow the summary to be run until the error is resolved.

Simple Patrol Summaries

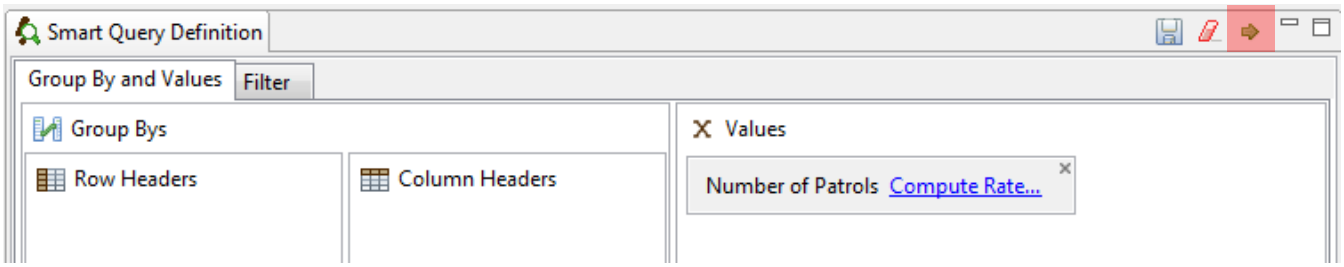
For this example, you will build a simple summary to calculate the total number of patrols entered into the system for this Conservation Area.



- Select **Query – New Query – Patrol Queries New Patrol Summary Query**
- Select **All Dates**

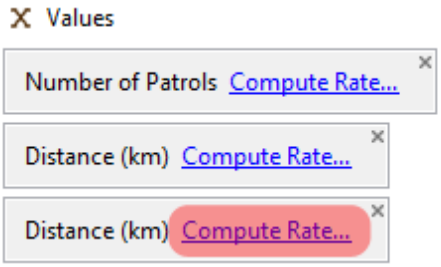


- Under Patrol Values, double-click **Number of Patrols** to add it to the Summary Values window



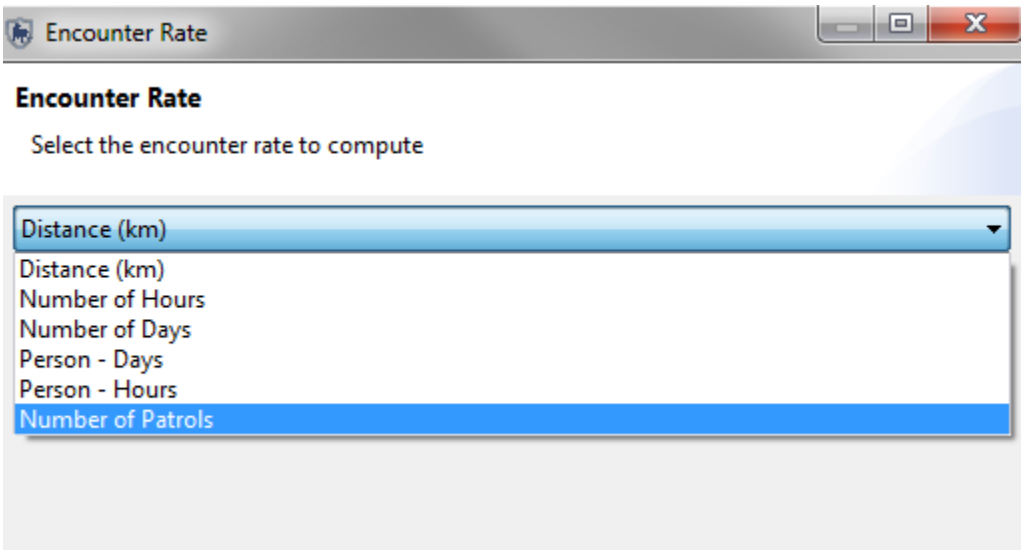
- Run the Summary by using the green arrow

The SMART summary will display the total number of patrols for this Conservation Area



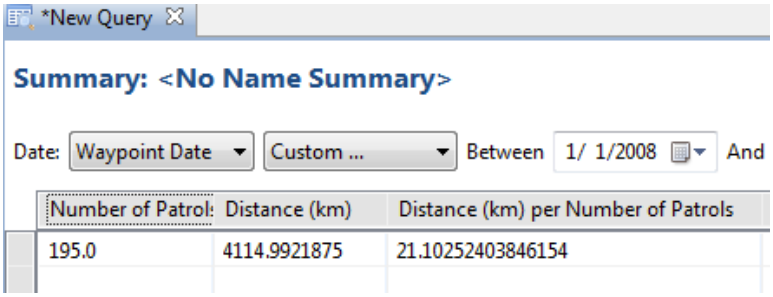
- Return to the Value Options and add **Distance (km)** to the query
- Add **Distance (km)** a second time to the query window

Building on the complexity of the summary you will add the **computed value of Number of Patrols per Kilometer travelled.**



- On the lower Distance (km) click **Compute Rate …**
- Select **Number of Patrols** from the pull down list
- Click **OK**

- Run query
- Save the Query as **Number of patrols per Km travelled**

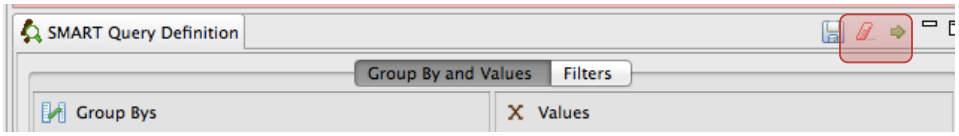


Simple Data Model Summaries

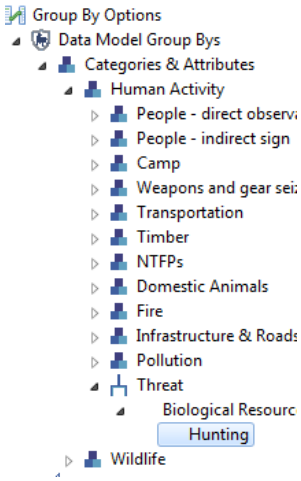
As with the queries there are options to build up summaries of Patrol Values, Data Model Values or a combination of the two.

This example is a simple data model summary to count the total number of observations that are under the category of Hunting.

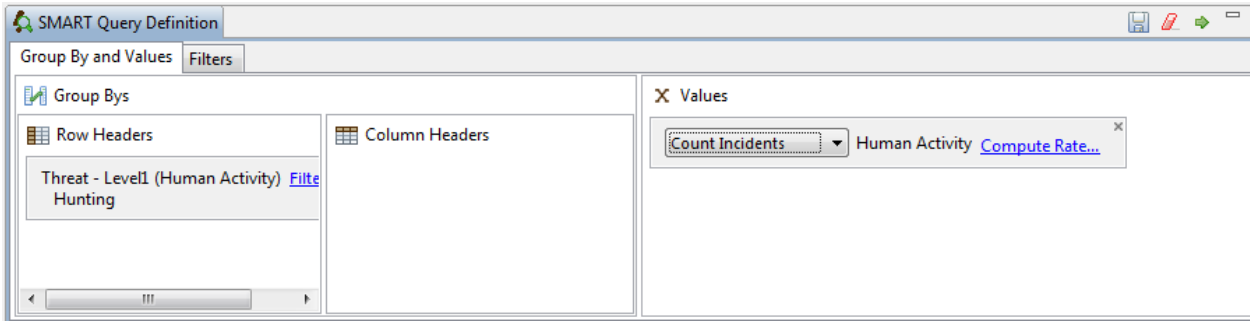
- Clear the current Summary by clicking on the red icon pictured below



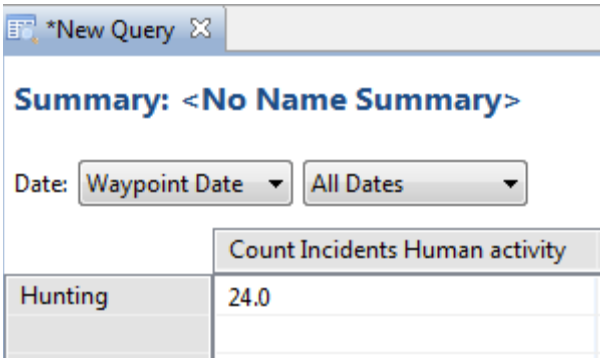
- Select **Data Model Group Bys – Categories & Attributes – Threat – Biological Resource Use - Hunting**
- Keep the date range as **All Dates**



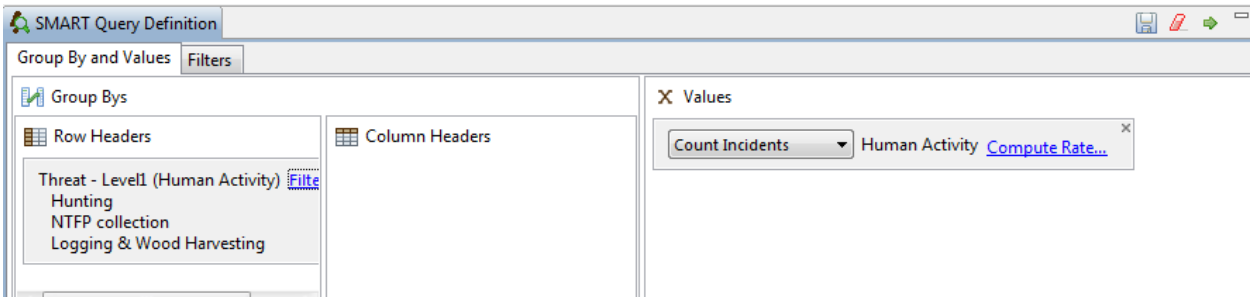
- Then select **Date Model Values – Count 'All Categories' – Count 'Human Activity'** and double-click to add it to the query
- Select '**Count Incidents'** (this will count the number of unique waypoints, rather than the number of observations)



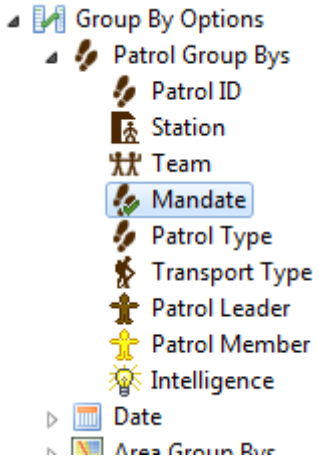
- Run Query



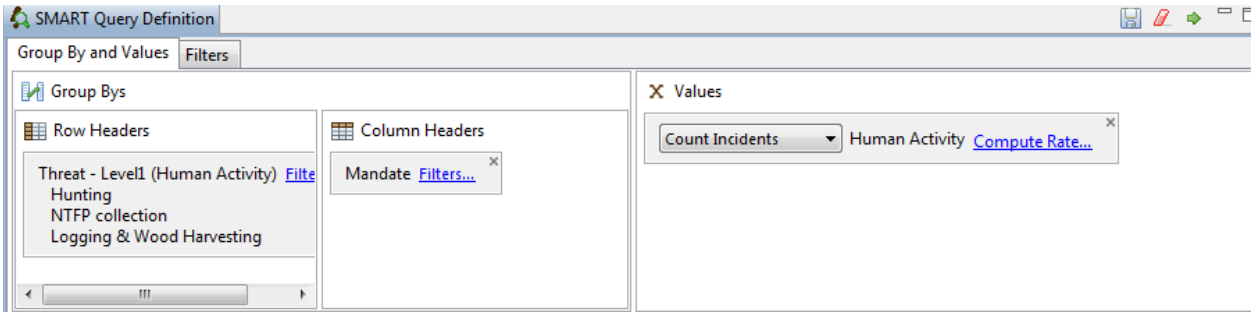
- Add other threats to hunting in the query window



- Re-run the query



- Double-click **Mandate** in the **Group By Options – Patrol Group by**
- Drag Mandate under 'Column Headers'
- Re-run the query



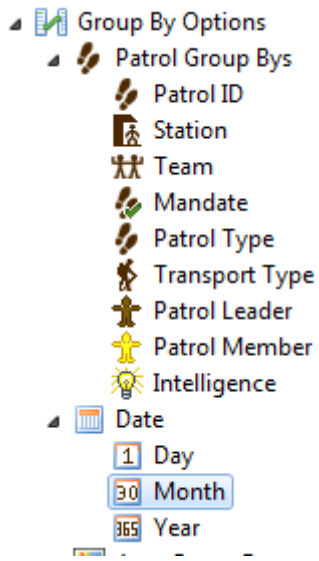
Summary: <No Name Summary> **ID:**

Waypoint Date | All Dates | summary properties...

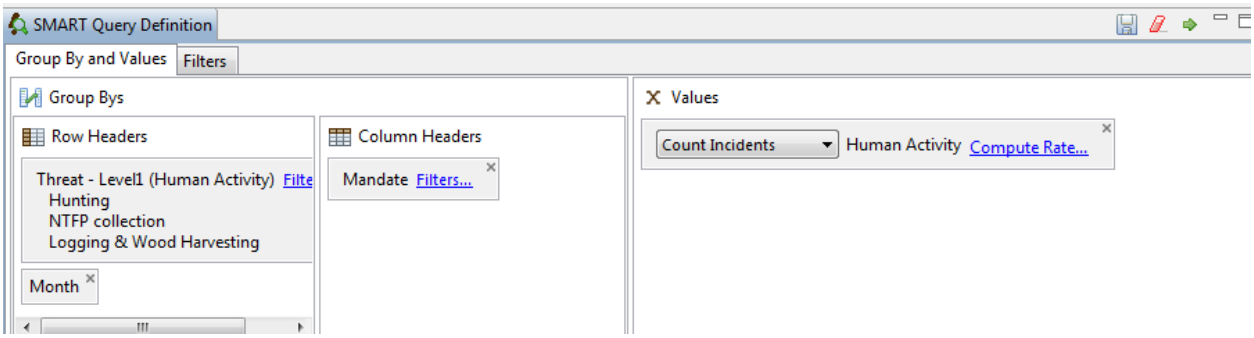
	Anti-poaching Count Incidents Human Activity	Follow-up Count Incidents Human Activity	Research and Monitoring Count Incidents Human Activity	Surveillance Count Incidents Human Acti
Hunting	17.0	9.0	1.0	8.0
NTFP collection	1.0			1.0
Logging & Wood Harvesting	4.0	2.0		1.0

Grouping by Date

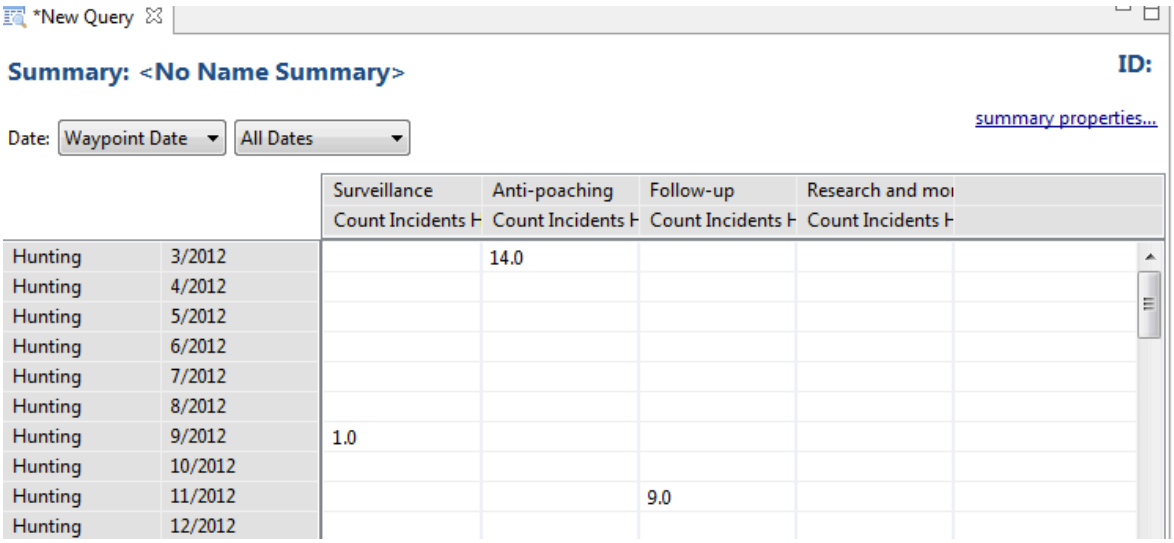
You can also group-by date – this allows you to report observations by month or year



- Select **Group By Options – Patrol Group Bys - Date – Month**
- Double-click to add to the query



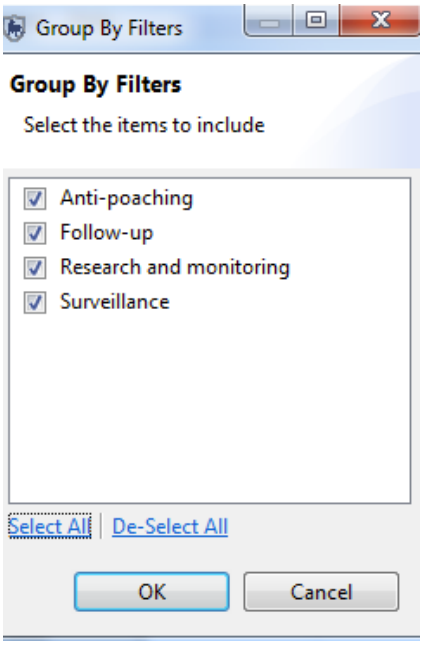
- Re-run query



Filters

Filters provide a simple way to filter summary results

- Click on **Filters** next to Mandate



- Deselect all except **Anti-poaching**
- Re-run the query

Saving summaries

Summaries are saved in the same way as queries. Save the summary query you just created as '**Number of threats by anti-poaching patrol'** under My Queries.

Exporting summary query results 

Comma Separated Values (CSV) table
A query export of the file type Comma Separated Values (CSV file) imported into other spreadsheet or database software (e.g. Excel), to recreate the results that are seen in the Tabular Results view.

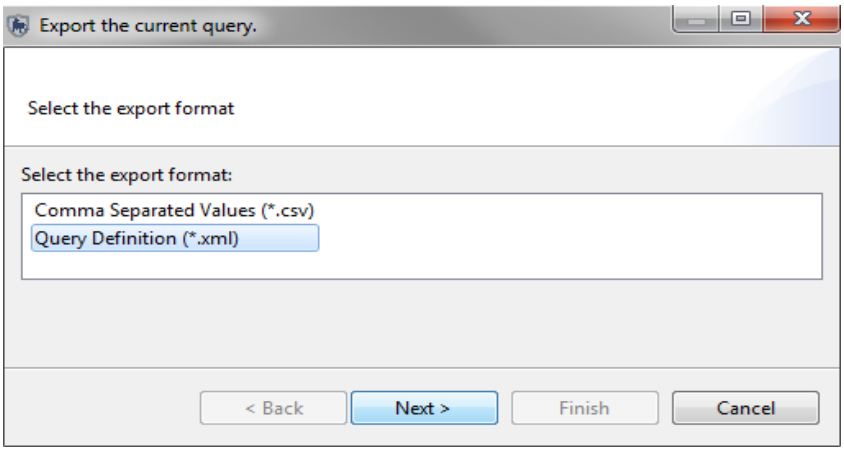
- After you have run the summary query, click on the Query Export icon  and select **Comma Separated Values (*.csv).**
- Save the file on your computer
- Locate the file and open with **Excel** to see the results.

Exporting and Importing Query templates

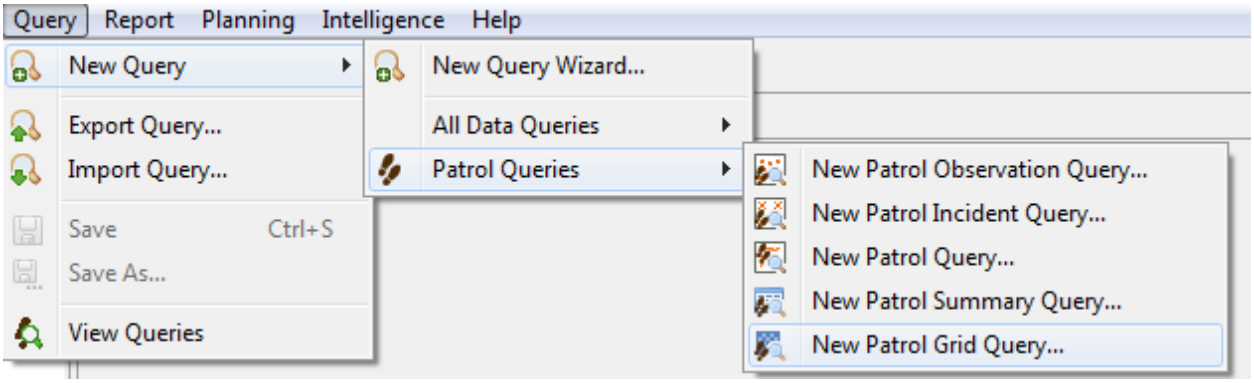
Once a query or summary is created, it can be exported out to an XML file that can be used by another Conservation Area. Importing pre-existing queries and summaries allows for standardization of analysis and reporting (this is covered in the next module).

Query Definition
A query export of the file type Query Definition will produce an XML text file that can be distributed to others, allowing them to import the query into their Conservation Area.

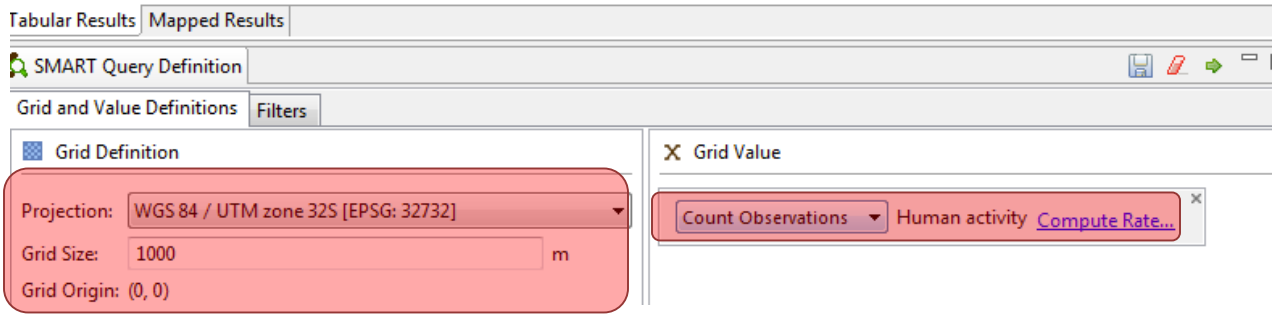
Using the menu or the export query icon  you can export queries and summaries.



Creating a Grid Query



- In the menu select **New Patrol Grid Query**
- From the Data Model Values double-click **Count Human Activity** to add to query
- Select **Count Observations**
- Ensure Projection = **WGS 84/UTM 32S**
- Change **grid size to 1000m**
- Select **All Dates** in the date filter
- Run query

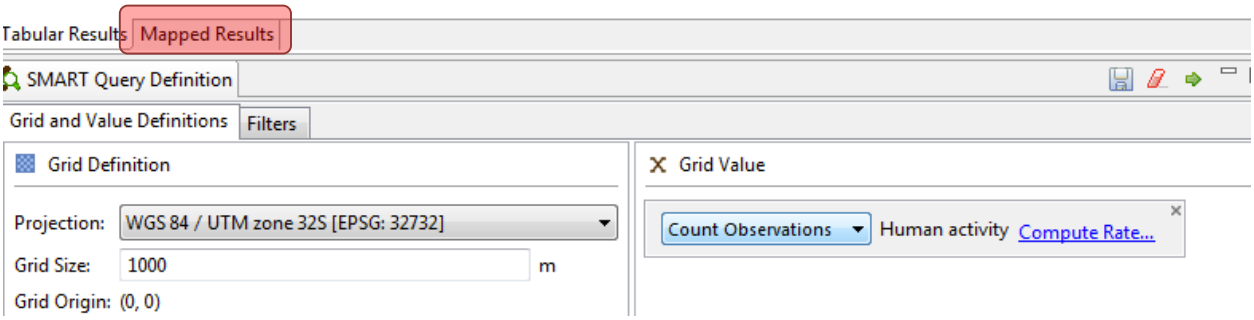


Tabular Results

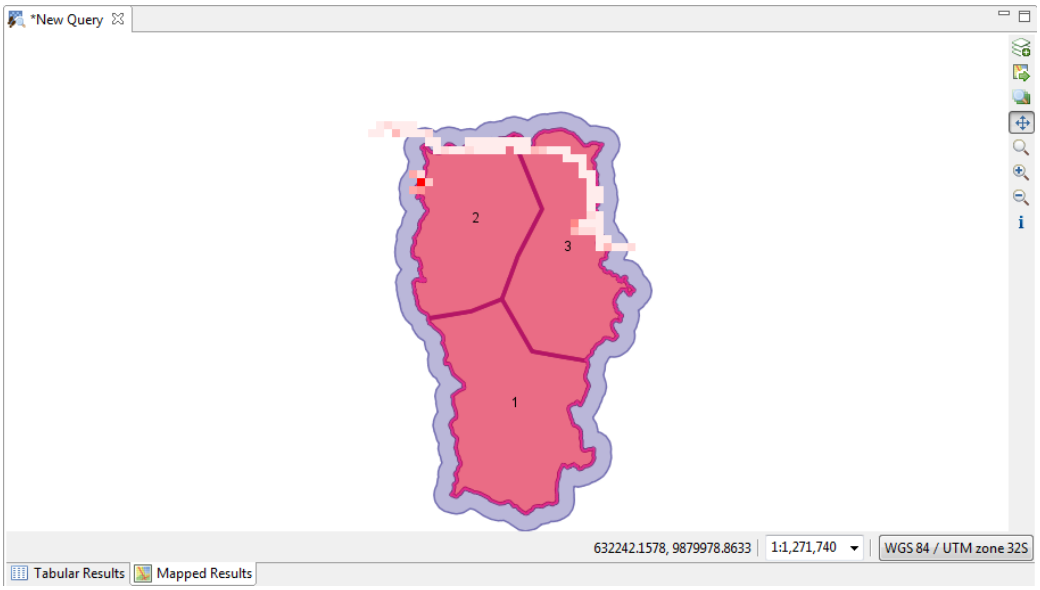
The default view is for the list of tabular results. This table shows the grid co-ordinates and values of how many observations were found within that grid cell. The output includes all grid cells patrolled during that period, so if a grid cell was patrolled and found no observations it will have a value of 0. The table also includes the denominator value (e.g. distance patrolled) if there is one selected (see encounter rates below). For most users, the Tabular Results will not be as important as the Mapped Results.

Mapped Results

As with other types of queries the results can be viewed in tables or in a map. The results for this type of query are displayed as a raster or grid layer.

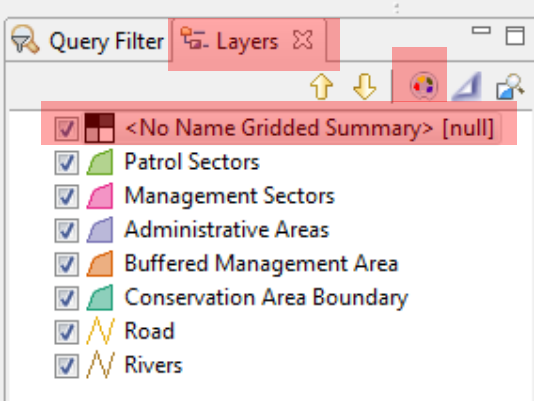


The Mapped Results screen now shows a number of grid cells of varying color where grid cells were patrolled and where observations from the query can be found. The color of each grid cell corresponds to the number of observations recorded within the cell.



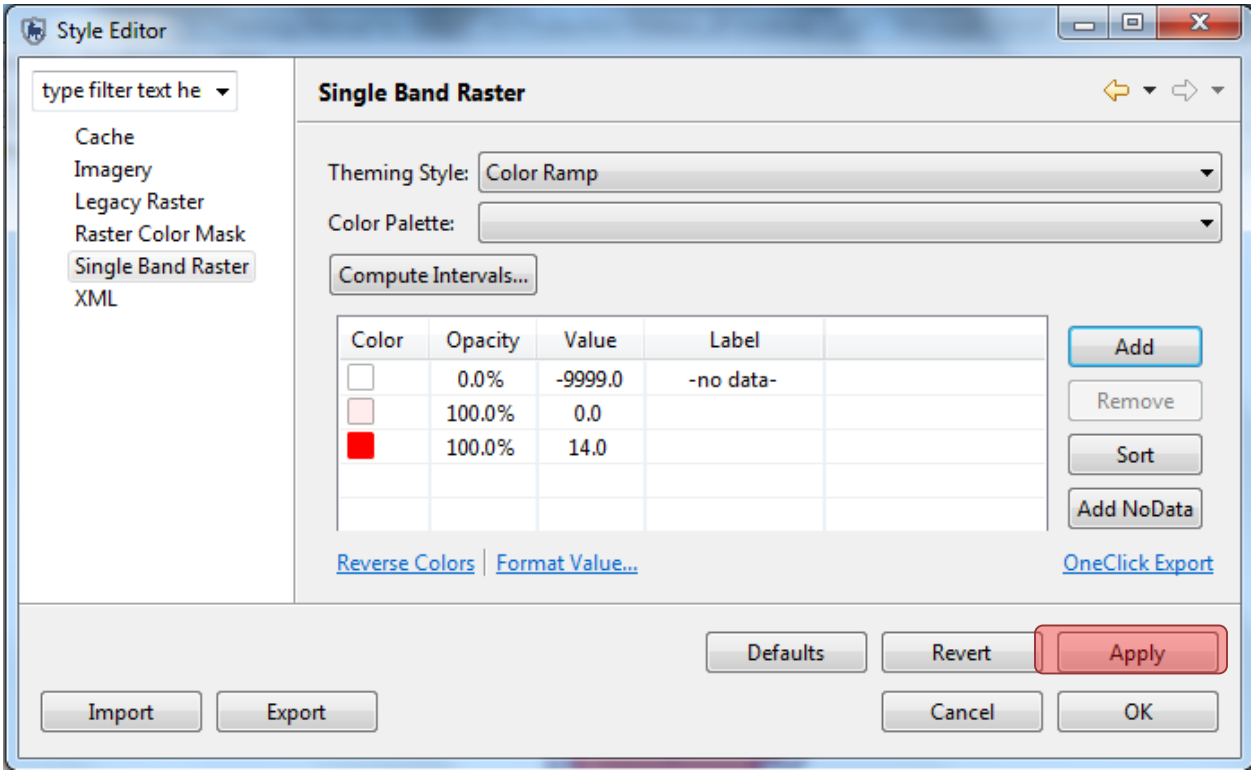
Change the map style of gridded queries

In the previous modules, you explored different options for changing the style of points, lines and polygon layers, Now, you are going to modify the style for a gridded query result layer.

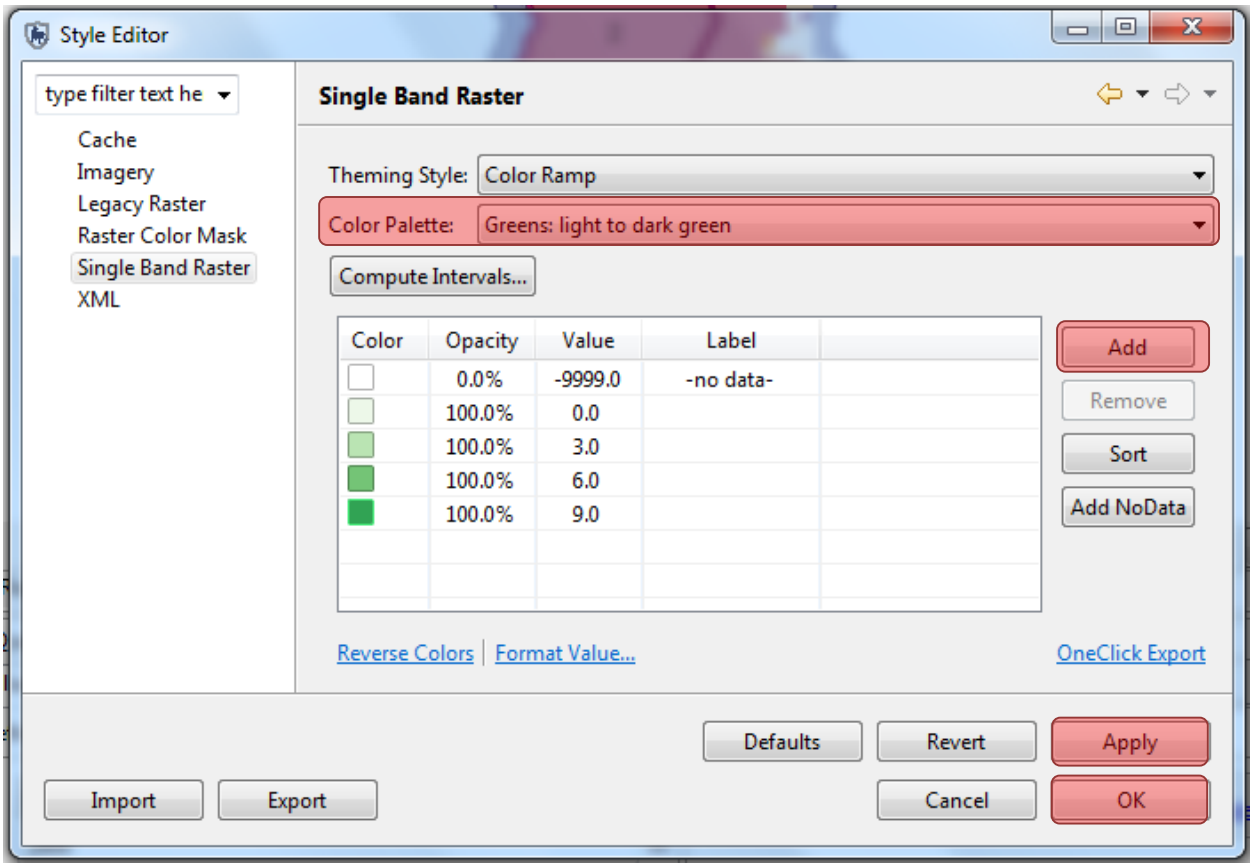


- Click on the **Layers** tab (next to the Query Filter on the window on the right).
- Select the layer **No Name Gridded Summary (null)**
- Click on the icon to **change the style of the layer Style**
- Select **Single Band Raster** (on the left-hand menu-bar)

Note *: Don't modify the first line (0-9999 – no data).*



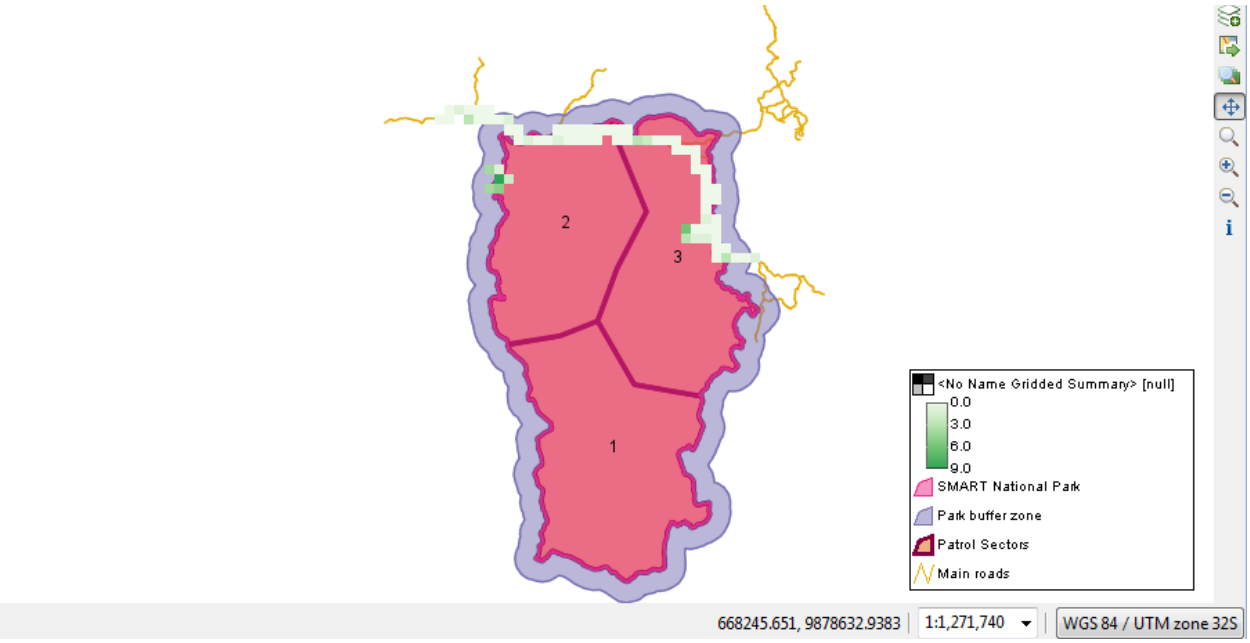
- Click **Add** twice to add **2** more intervals
- Change the values for the intervals at four equal intervals between the minimum and maximum value (for example if the minimum is 0 and the maximum is 9, change interval values to **0, 3, 6, 9**).
- Under **Colour Palette**, select the colour ramp that you like
- Click **Apply**
- Click **OK**



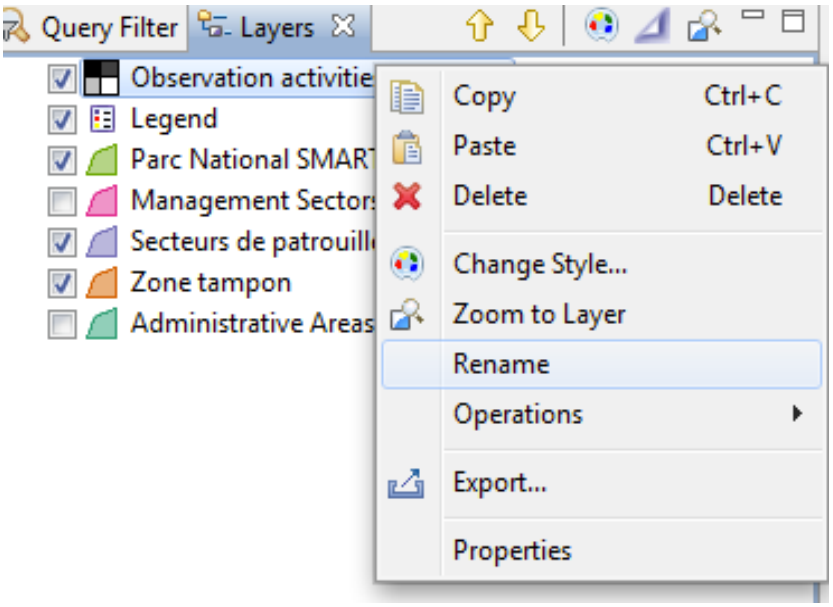
Add a legend

- Next to the map, click on the icon **add a layer to the map** 
- Select **'Map decoration'**
- Click **Next**
- Check **'Legend'**
- Click **Finish**

- Load the Basemap **'SMART Map with Legend'** that you created in Module 2 by clicking on the map icon 



- In order to rename the query and how it appears in the legend, right-click on the query layer and selecting '**Rename'**

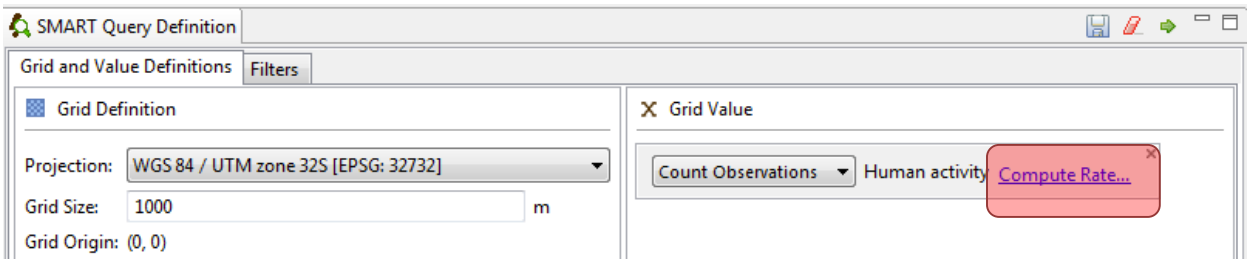


- Save the query as **'Human Activity Observations'** under **My Queries**

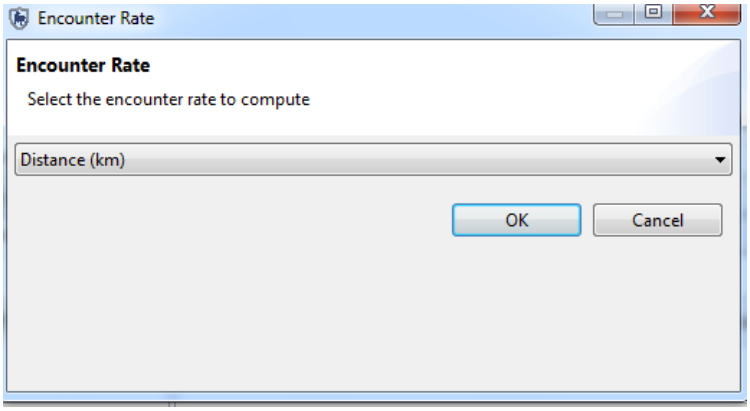
Encounter Rate Grids

You can also directly calculate encounter rates (e.g. number of observations/unit effort) in each grid cell.

- Click **Compute Rate** next to **Count Observations – Human Activity**



- Select **Distance (km)** and click **OK**



The query will now calculate the number of human observations/km patrolled.

- Run the query
- Save the query as **Encounter rate of human activities** under My Queries

Filtering a Query

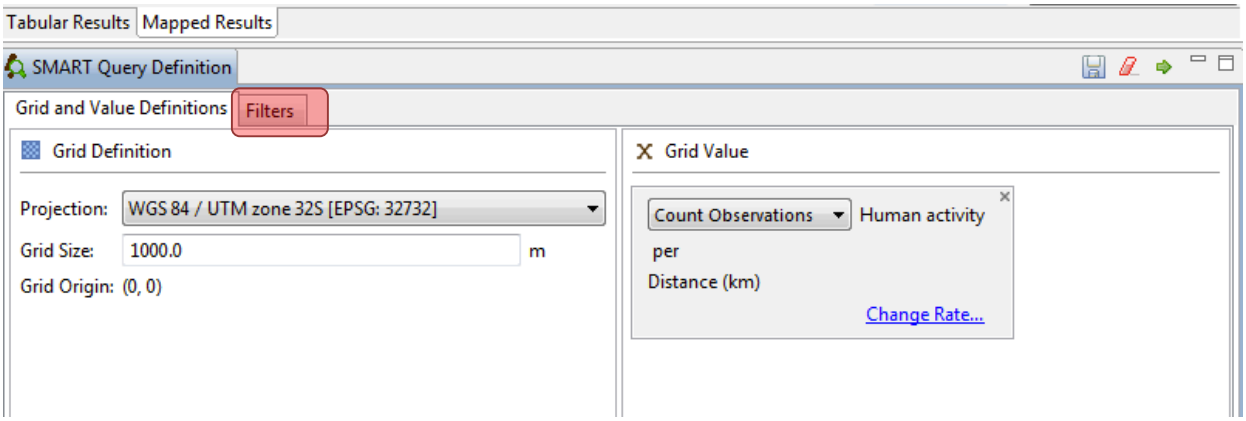
A filter can be applied to the gridded summary. For grids, there are two types of filter:

Value Filter : Filters the numerator/observations (ie. number of human activity observations)

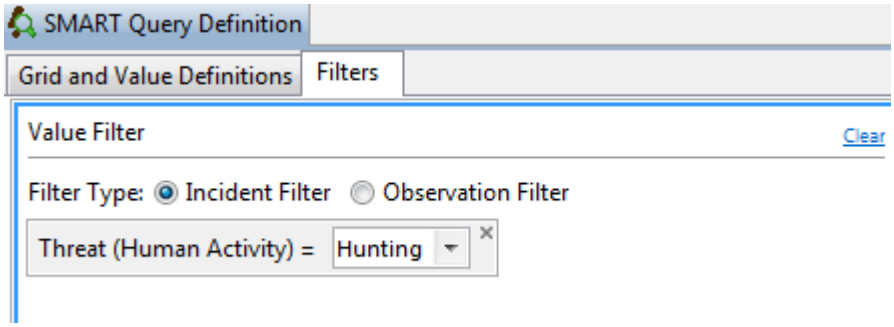
Rate Filter : Filters the denominator/unit of effort

- As an example- set up the gridded summary to caluculate the **encounter rate of hunting observations** (i.e. only human activity observations filtered by hunting) **by km patrolled** (for all patrols, not just those where hunting was observed)

- Click on the **Filters tab**



- In the Data Model Filters list double-click on Human Activity –Threat to add this under the **Value Filter**
- Type **'hunting'**
- Select **Incident Filter**
- Leave Rate filter blank (you want to include all patrols without any patrol)
- Run the Query

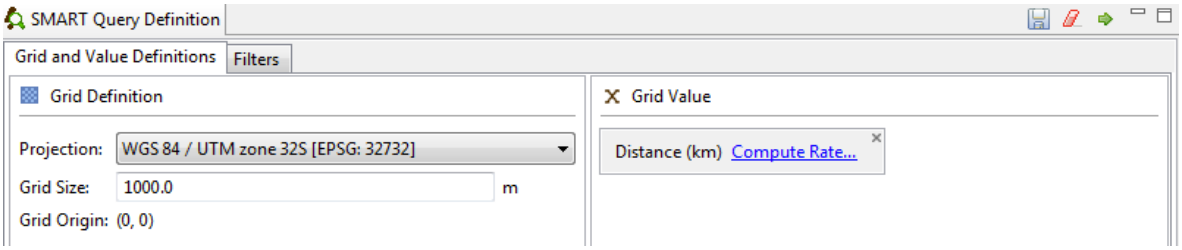


- Save as '**Hunting observations/km'** under **My Queries**

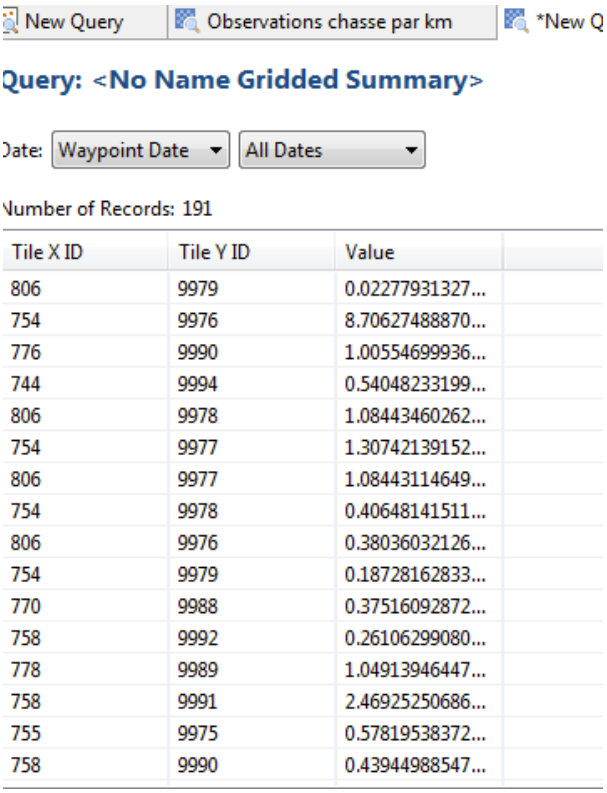
Patrol effort grids

Grids can also be created for different measures of patrol effort (distance patrolled in each grid cells, number of patrol days in each grid cell).

- Create a **New Patrol Grid Query**
- Set Projection to **UTM 32S** and grid size to **1000m**
- From Patrol Values, select **Distance**



- Select **All Dates**
- Run Query



Tile X ID	Tile Y ID	Value
806	9979	0.02277931327...
754	9976	8.70627488870...
776	9990	1.00554699936...
744	9994	0.54048233199...
806	9978	1.08443460262...
754	9977	1.30742139152...
806	9977	1.08443114649...
754	9978	0.40648141511...
806	9976	0.38036032126...
754	9979	0.18728162833...
770	9988	0.37516092872...
758	9992	0.26106299080...
778	9989	1.04913946447...
758	9991	2.46925250686...
755	9975	0.57819538372...
758	9990	0.43944988547...

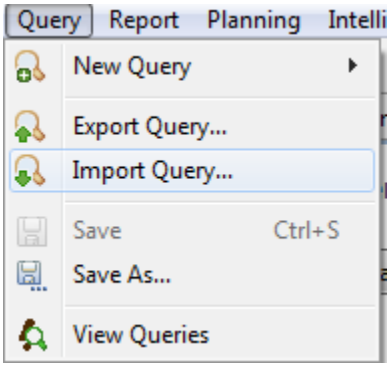
The tabular results show the distance patrolled in each grid cell

The mapped results shows patrolled coverage as a function of patrol distance patrolled in each grid cell

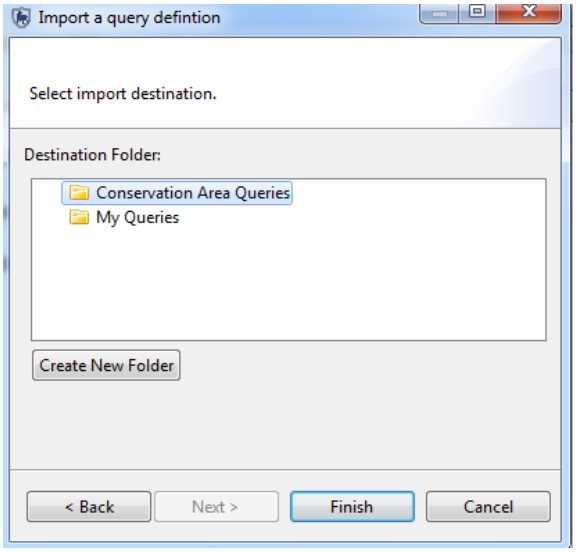
- Save the query as **Patrol Coverage by Distance** under **My Queries**

Importing Queries and Summaries

Queries and Summaries are imported into SMART using a previously exported query saved as an XML file. To demonstrate this, you will import a few queries and summaries into a custom folder in the Conservation Area Queries.

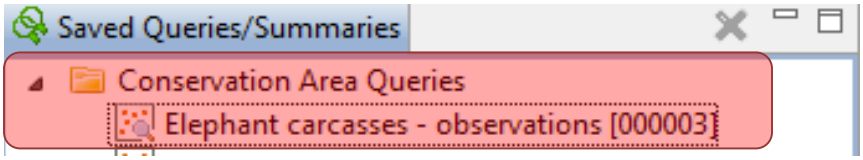


- From the menu select **Import Query ...**
- Select **Import from File** and click File and click **Next**
- Click **Add** and browse to folder **Module 4\ Queries**
- Select **Elephant carcasses - observations.xml**
- Click **Open**
- Click **Next**



- Select **Conservation Area Queries**
- **Finish**

Under **Conservation Area Queries**- you'll now see the new query (you might need to expand the arrow under Conservation Area Queries)

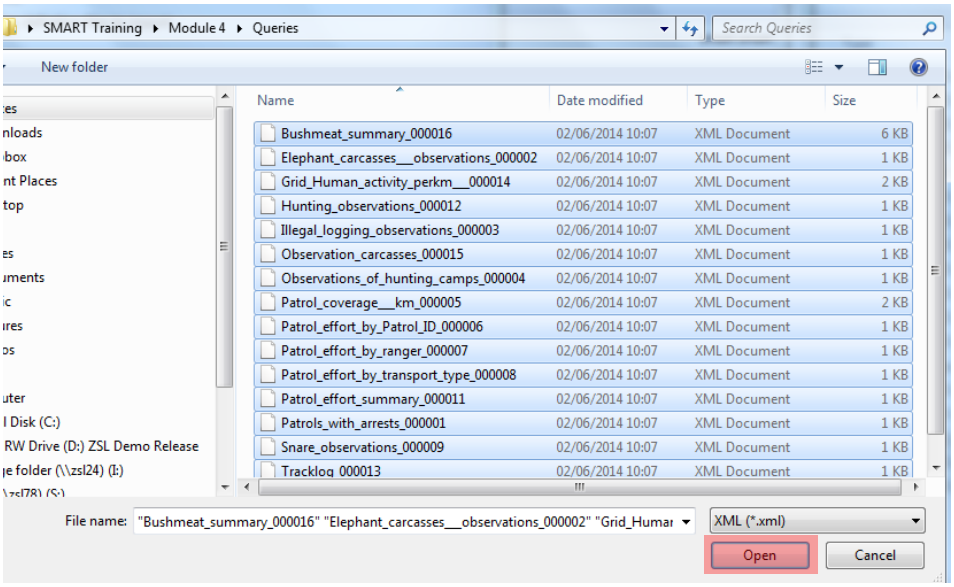


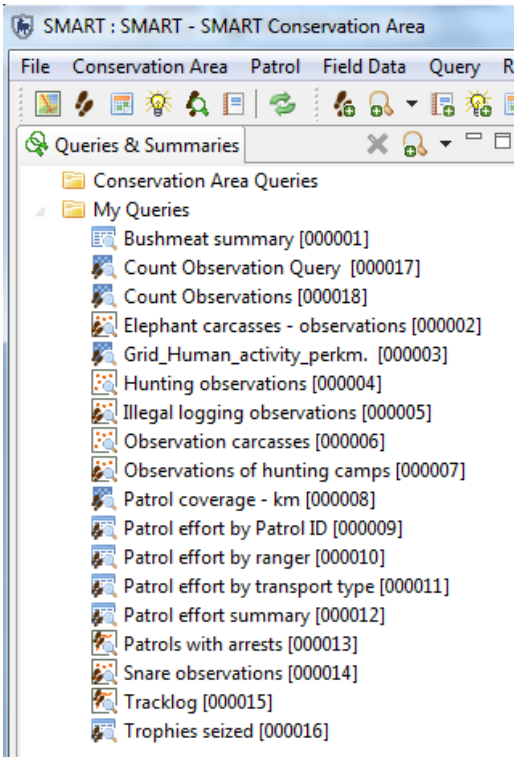
- Double-click on the query to see how it was created
- Run the query (make sure All Dates is selected)

In the Query folder there are a number of queries and summaries you can import into SMART

- Import the rest of the queries under **Conservation Area Queries,** and run each to see the results.

***Note**: You can import all queries and summaries in the Query folder at once by selecting all and importing.*





***Note**: You'll need some of these queries to create the Reports in the next module*

<End of Module 4 – Queries and Summaries>

Module 5 - Reports

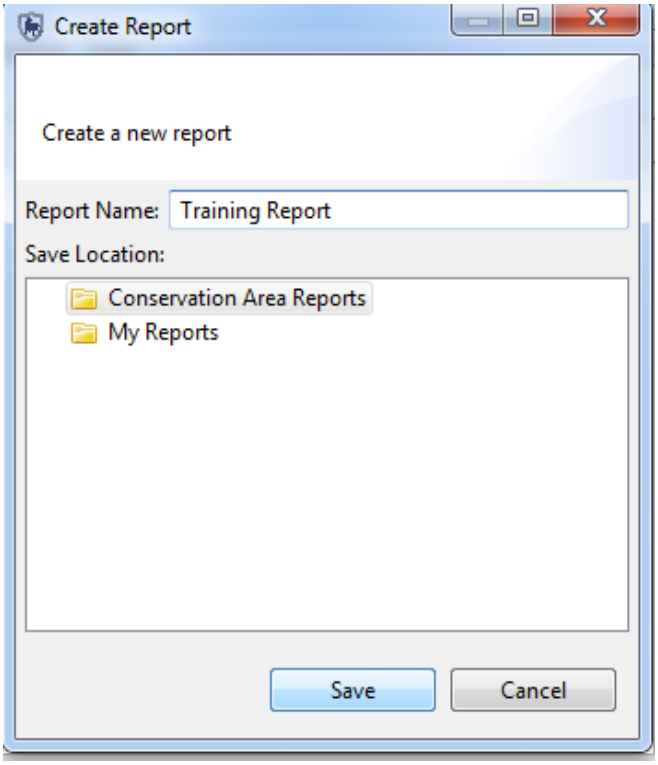
Objective:

This module will guide you through the process of creating, editing and populating a SMART report. SMART reports are highly configurable and allow for a wide range of standardized reporting. The information on the reports can be dynamically generated based on the results of SMART queries and summaries. A major component of SMART is its mapping ability, and SMART reports allow maps to be included and customized to suit the report.

- **Understanding the components of the report editor**
- **Configuring data access**
- **Creating master page templates**
- **Building a report**
- **Running a report**
- **Exporting reports**

Detailed Steps for Creating a Report:

- From the menu select **New Report**



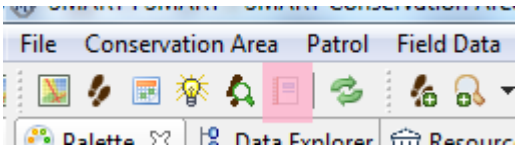
- For Report Name type **Training Report**
- Select the **Conservation Area Reports** folder as the location
- Click **Save**

Switching Between Report List and Report Editor

After creating the first report SMART will display the Report List screen and toolbars

To run, export or manage reports you will need to be using the Report List screen.

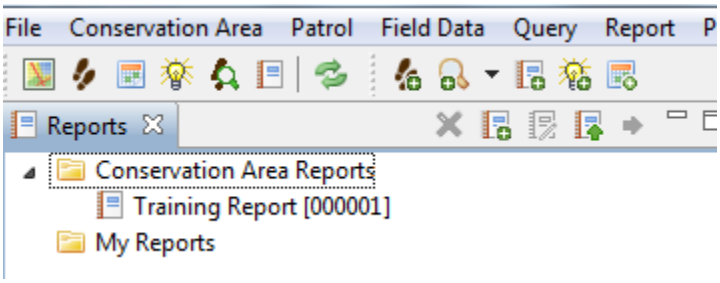
The icon to return to the report list screen is available on the default SMART icon bar.



- To return to the Report List select the **Show Reports icon** 

Report List Toolbar

The report toolbar has icons for creating, editing, running, exporting and deleting reports.



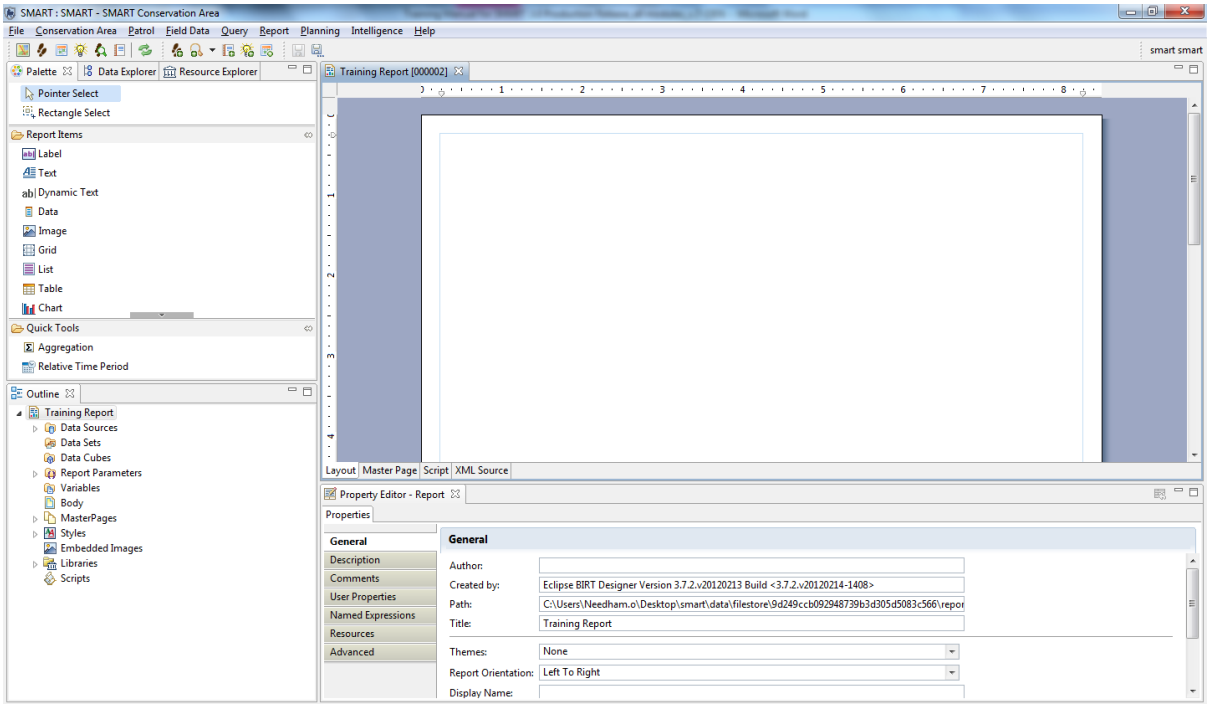
	Deletes the selected report(s)
	Creates a new report
	Edits the selected report(s)
	Runs and exports the selected report(s)
	Runs the selected report(s)

- To return to the Report editor select the **Edit Report icon**

Components of the Report Editor

The Report Editor consists of a few basic components, which contain their own functionality and have their own purpose.

You probably won't use all of them. Below we explain some of the components that you will probably use most often.



Design Window

The Design Window is where the components of the report are organized. This window does preview what the final report will look like as reports are generally based off dynamic data. The window allows for the layout of the objects to be added and customized as to content, size and style.

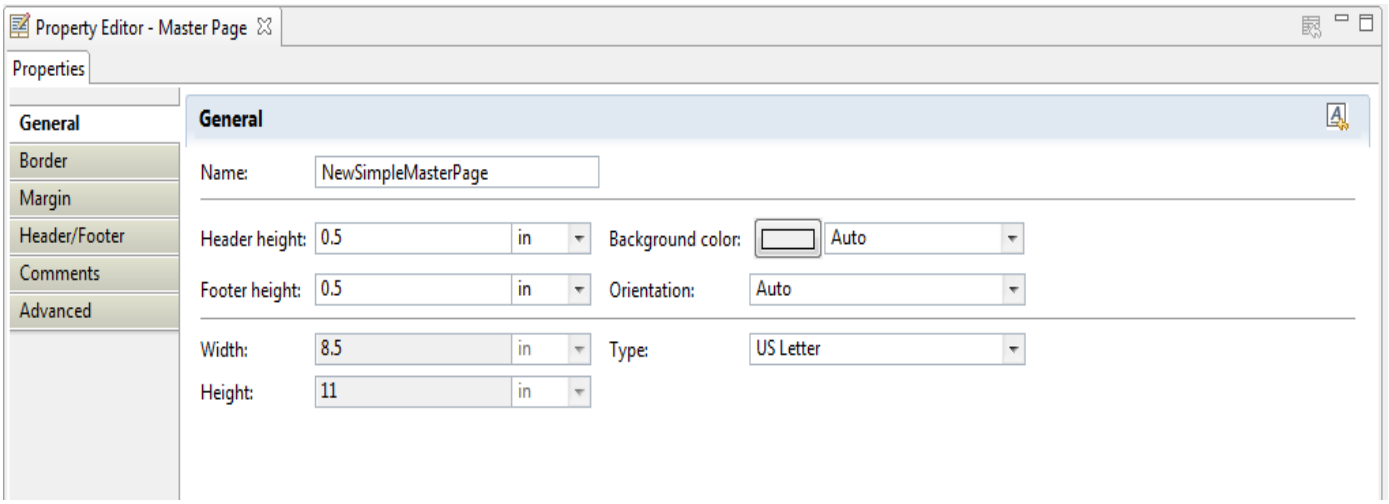
The **Layout and Master Page tabs** at the bottom are the two tabs that most users will mainly use. It is highly recommended not to make any edits in the Script or XML Source tabs, unless you are an advanced user who understands the risks of directly editing the code used to generate the report.

Property Editor

This window is used to edit the properties of the objects that have been loaded into the Design Window. The Property Editor options will change if you move between the Layout and Master Page tabs.

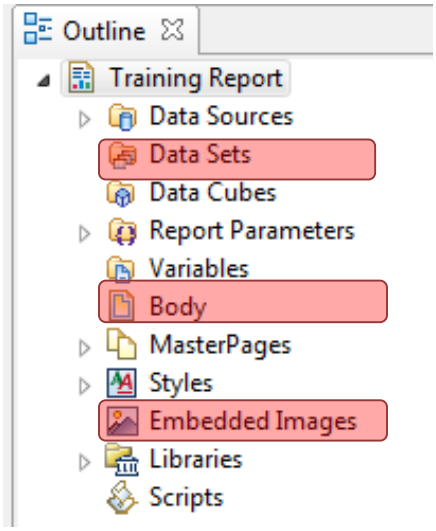
Report Properties (Master Page tab)

Used to specify general properties of the report's master page.



Outline

The Outline is used to organize the objects that are used to build and organize your report. Objects and Elements are imported into the outline, and allow for easy access to these components when reports are designed in the Design Window.



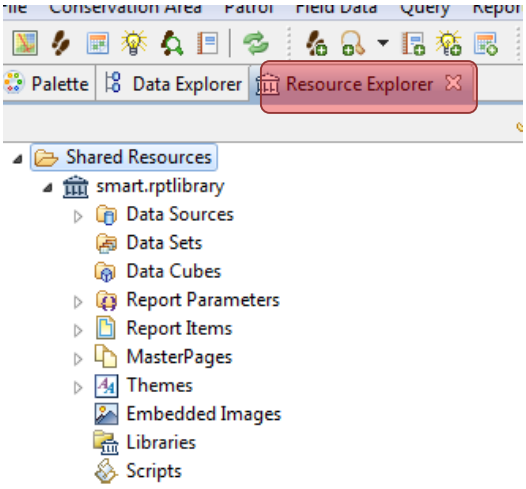
Data Sets - Linked to existing tables in the database (employees, stations, agencies and ranks, etc...) or to saved queries and summaries.

Body - When objects of the report are brought into the Layout Editor these objects will be visible in the Body section. Objects can be selected directly in this folder, moved around, deleted or edited through exposed parameters.

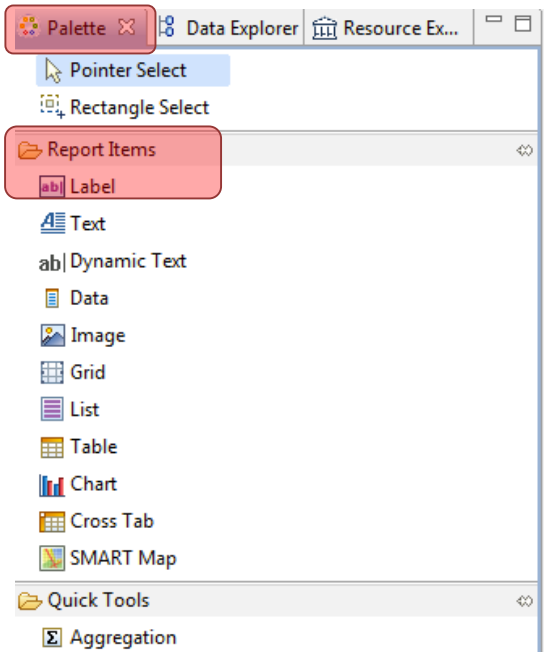
Embedded Images - Any images to be included in the report must first be included in this folder.

Resource Explorer

The Resource Explorer is where the Shared Resources of the library are accessed. Here is where you can save common report elements that are used in multiple reports, for example logos.



Report Items



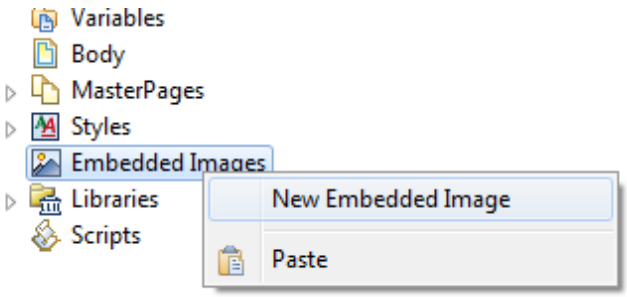
- **Label** - generally single line objects used for report titles or object labels.
- **Text** - open text boxes allowing for static text to be typed into the report.
- **Dynamic Text** - text based off custom or predefined variables or functions.

- **Data** - items in this data section have to be pre-loaded in the Outline or Library before they will appear.
- **Image** - items in the image section have to be pre-loaded in the Outline or Library before they will appear.
- **Grid** - grids allow for layout objects to be organized into rows and columns.
- **List** - insert flexible format presentation of data set rows in header/detail & footers.
- **Table** - insert column presentation of data set rows in header/detail & footers.
- **Chart** - used to insert charts into the report
- **Cross Tab** - inserts aggregated data in row and column format
- **Smart Map** - inserts maps into the report

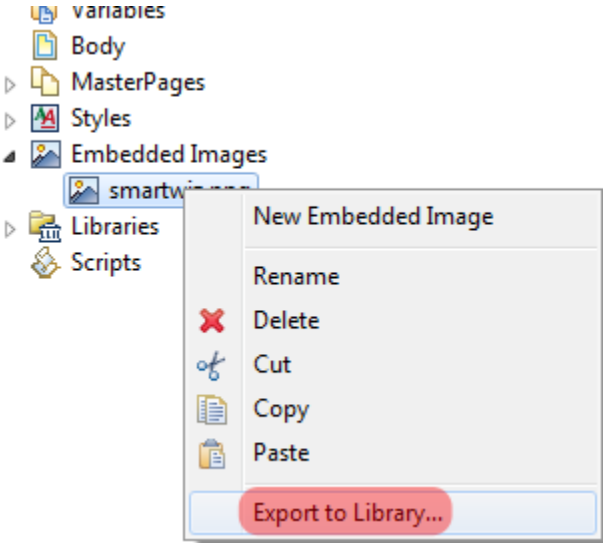
Configuring Data Access

In the first module you configured the Conservation Area to have a number of predefined elements allowing for the creation of patrols. Before reports can be created, data access also needs configuring. ***The following steps will guide you through setting up access to tables, queries/summaries and images.***

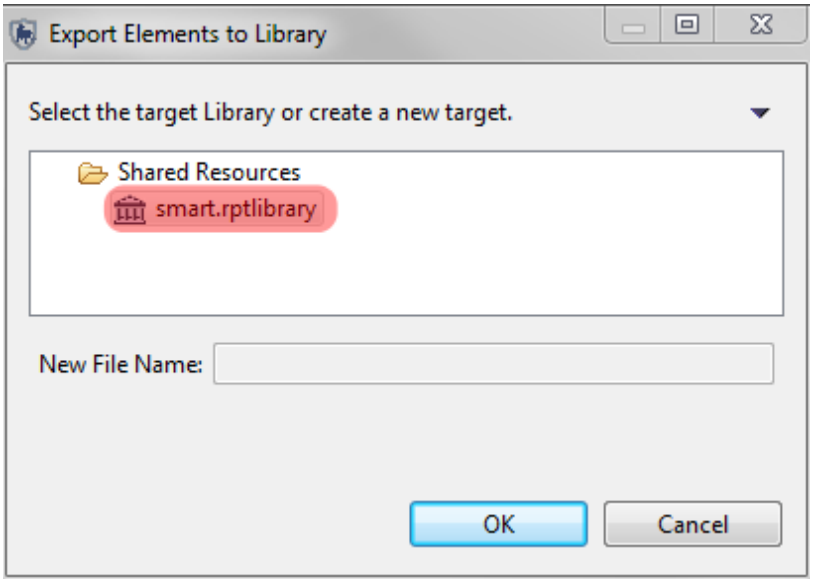
Adding Embedded Images



- Using the mouse right-click over the **Embedded Images** in the Outline
- Select **New Embedded Image**
- Browse to the folder **Module 5 \ Images**
- Select **smartwiz.png**
- Click **Open**



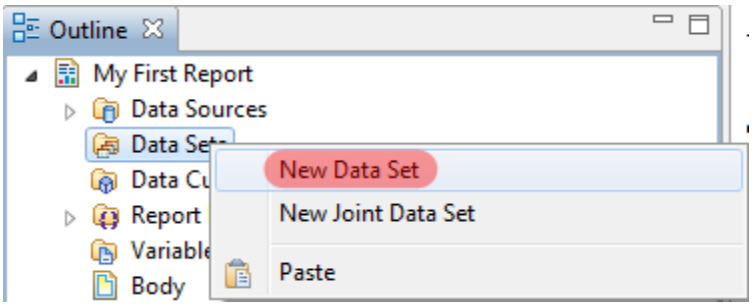
- Using the mouse right-click over **smartwiz.png**
- Select **Export to Library…**



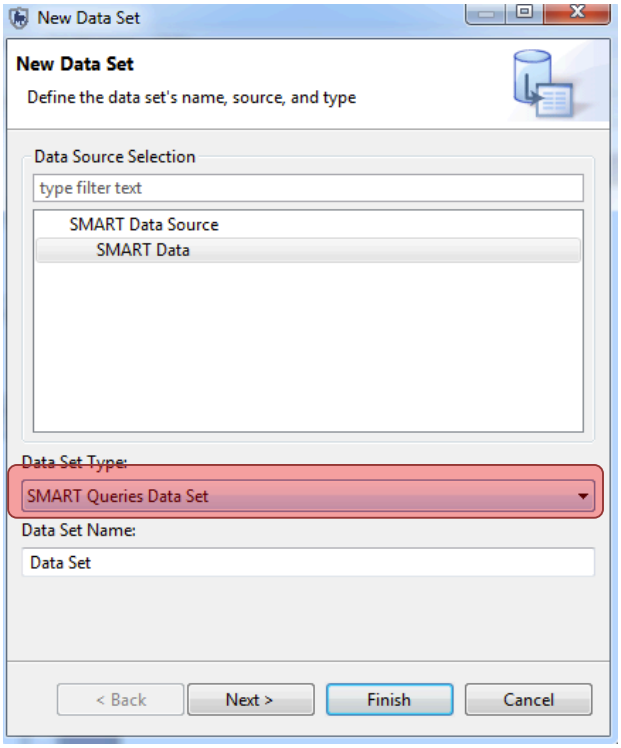
- Select **Shared Resources** … **rptlibrary … smart.rptlibrary**
- Click **OK**

Note: This image will now be available for other reports you want to create (you won't have to add it again each time)

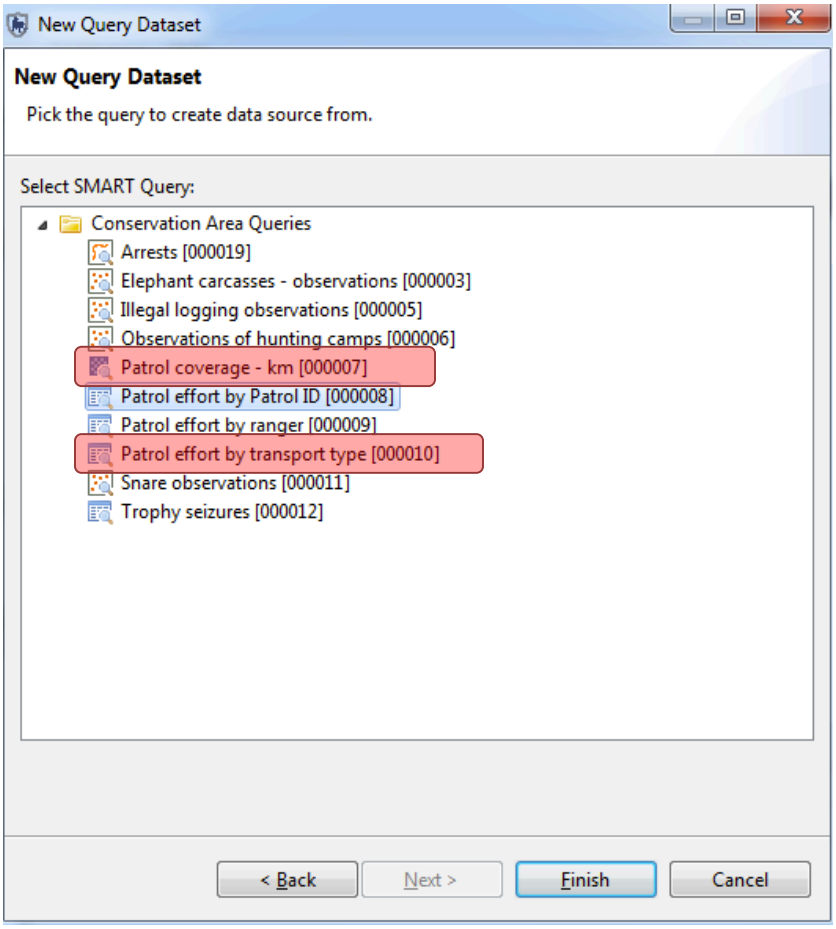
Adding Queries and Summaries



- In the Outline right-click over **Data Sets** and select **New Data Set**
- Under **Data Set Type,** choose **SMART Queries Data Set**
- **Next**

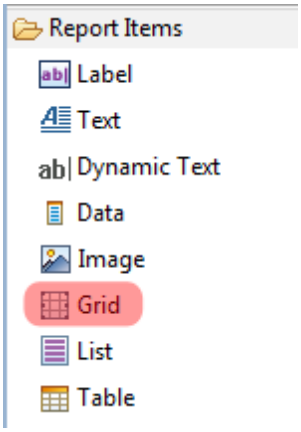


- Select: **Patrol coverage – km**
- **Finish** then **OK**
- Repeat the process to also add:
  - **Patrol effort by transport type**
  - **Patrol effort by Patrol ID**



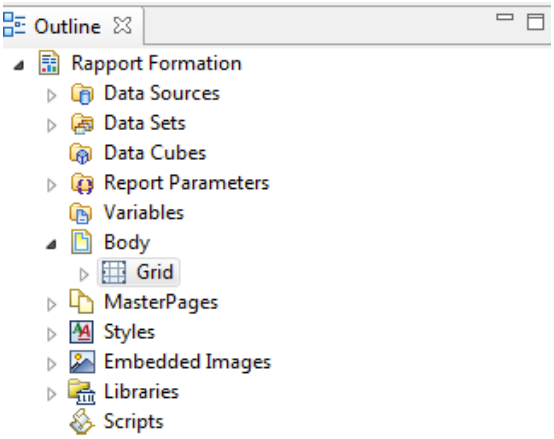
Create Report Title

Place a grid (1 row x 3 columns) to organize the layout of the report title on the page:



- Under **Report Items,** double-click **Grid (No columns = 3, No rows = 1)**
- Use the mouse to increase the row height of the grid

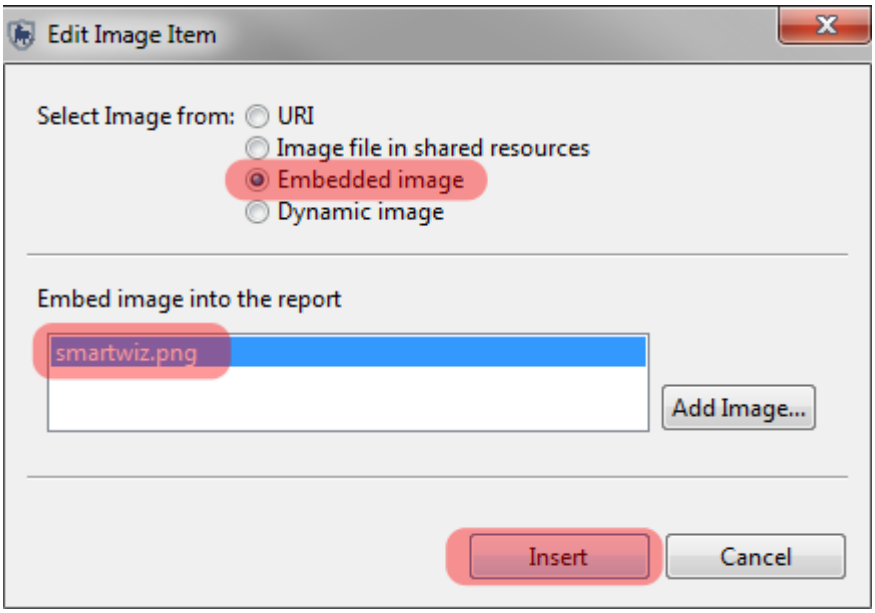
In the Report Outline, you can see the Grid you have added under **Body**. We're now going to add a title in the middle cell of the grid, and a logo in the left-hand cell.



Add an Image

We're going to add the embedded image we added earlier into the left-hand grid cell

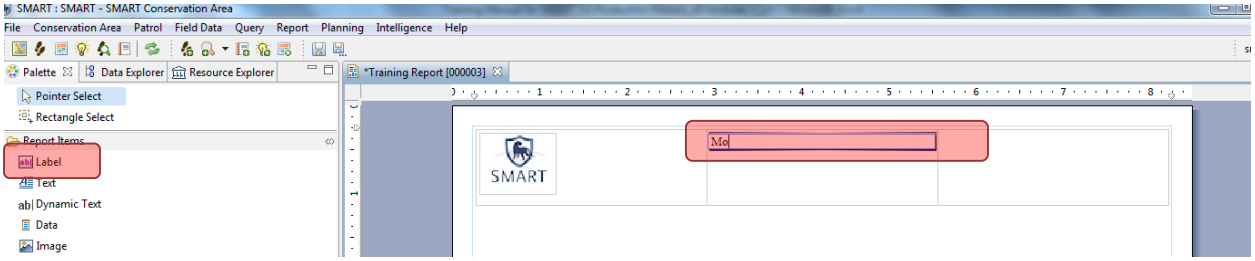
- Under **Report Items**, select **Image** and drag it into the left-hand cell of the grid



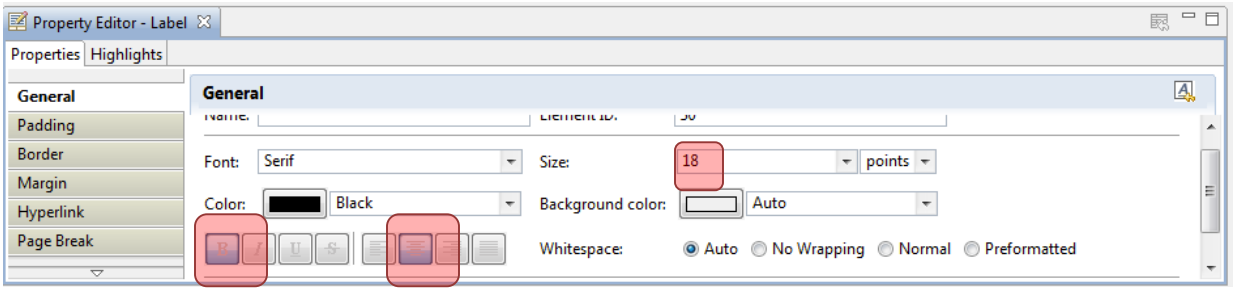
- Select **Embedded Image – smartwiz.png**
- Click **Insert**
- Re-size the image so it fits in the cell

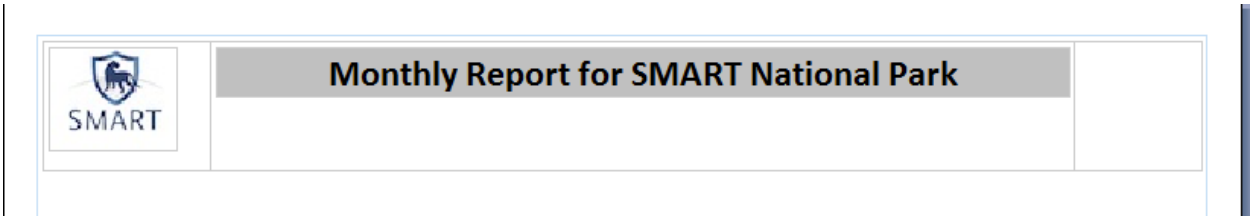
Adding Report Title as a Label

You are now going to add the title.



- Under **Report Items – select Label** and drag it into the middle cell of the grid
- In the text editor type something like: **Monthly report for SMART National Park**
- Press return to finish
- In the **Property Editor**, at the bottom of the screen, modify the text size and font style to **Bold 18**, and align the title in the centre of the grid cell. You can also change the background colour





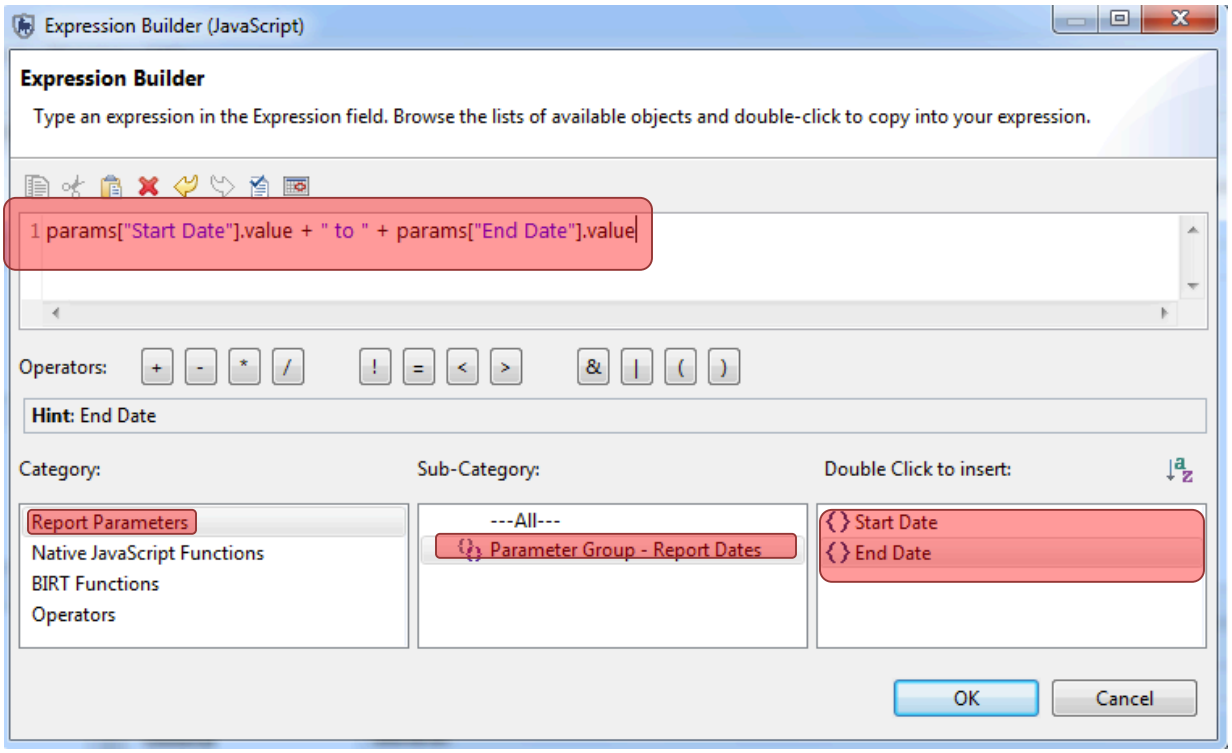
Note: Now you have added some elements – you need to save the report

- In the menu bar of icons – click on the **large disk image to Save**

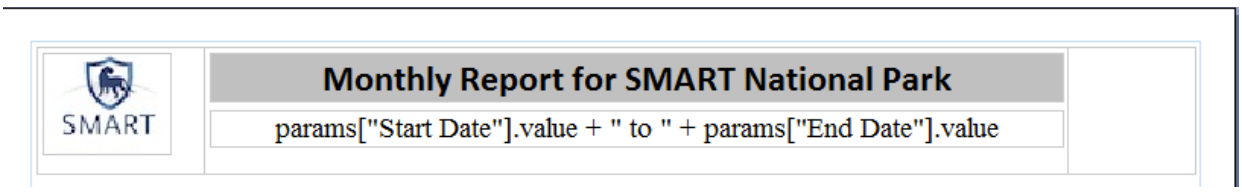
Adding reporting dates as dynamic text

Now we are going to add dynamic text, which will create the **reporting dates** each time the report is run (this will show the time period selected for the report).

- From the Report Items select **Dynamic Text** and drag it under the Report Title



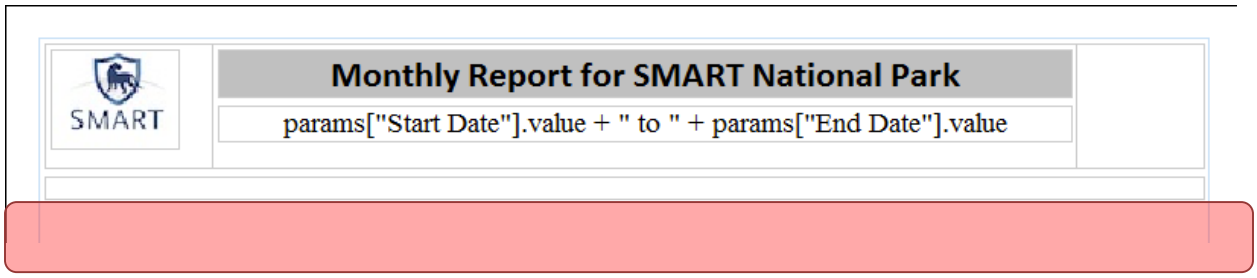
- Select Category of **Report Parameters**
- Select Sub-Category of **Parameter Group – Report Dates**
- Double Click **{} Start Date** to insert function into the expression builder.
- In the top window, type **+ " to " +** after **{} Start Date**
- Double Click **{} End Date** to insert function into the expression builder.
- Click **OK**
- In the **Property Editor** (bottom of screen) select alignment of **Center**



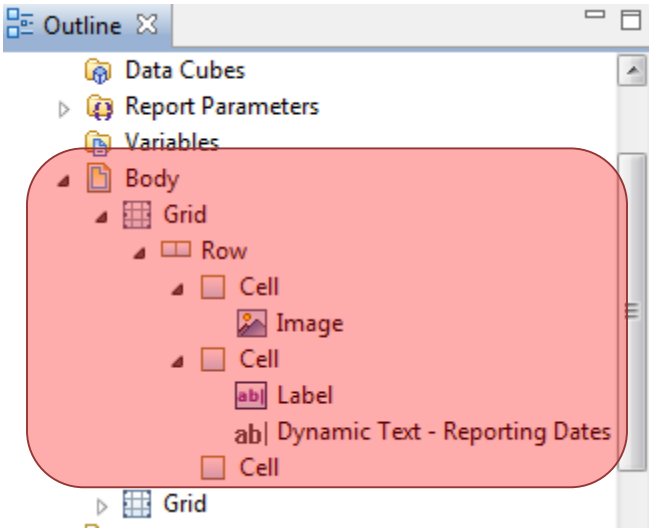
NOTE: Never edit the Dynamic text – this is filled in automatically when the report is run

When adding objects to the Design Window the application will add the object directly below the last object, leaving little space between objects. If more space is desired between objects, a grid with the dimensions of 1x1 can be added and resized to provide the desired amount of empty space.

- Add a grid with the dimensions of **1 column and 1 row** to the layout
- **Select and resize** the grid to the height you want
- Save the report

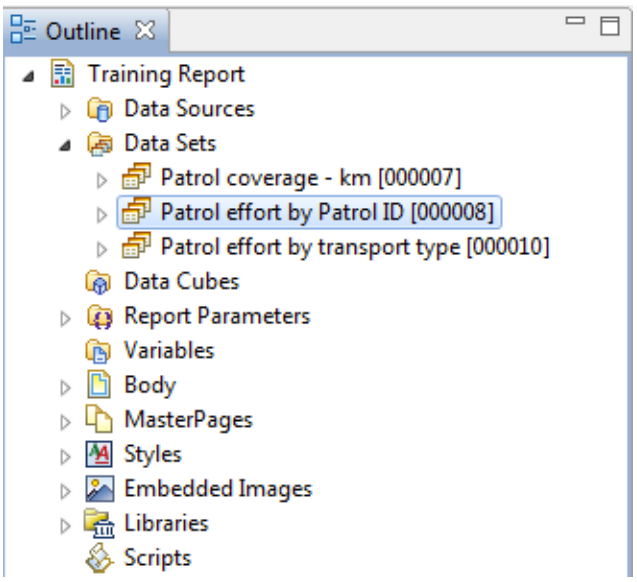


In **Report Outline** under **Body**, you can now see the structure of the elements you have added.



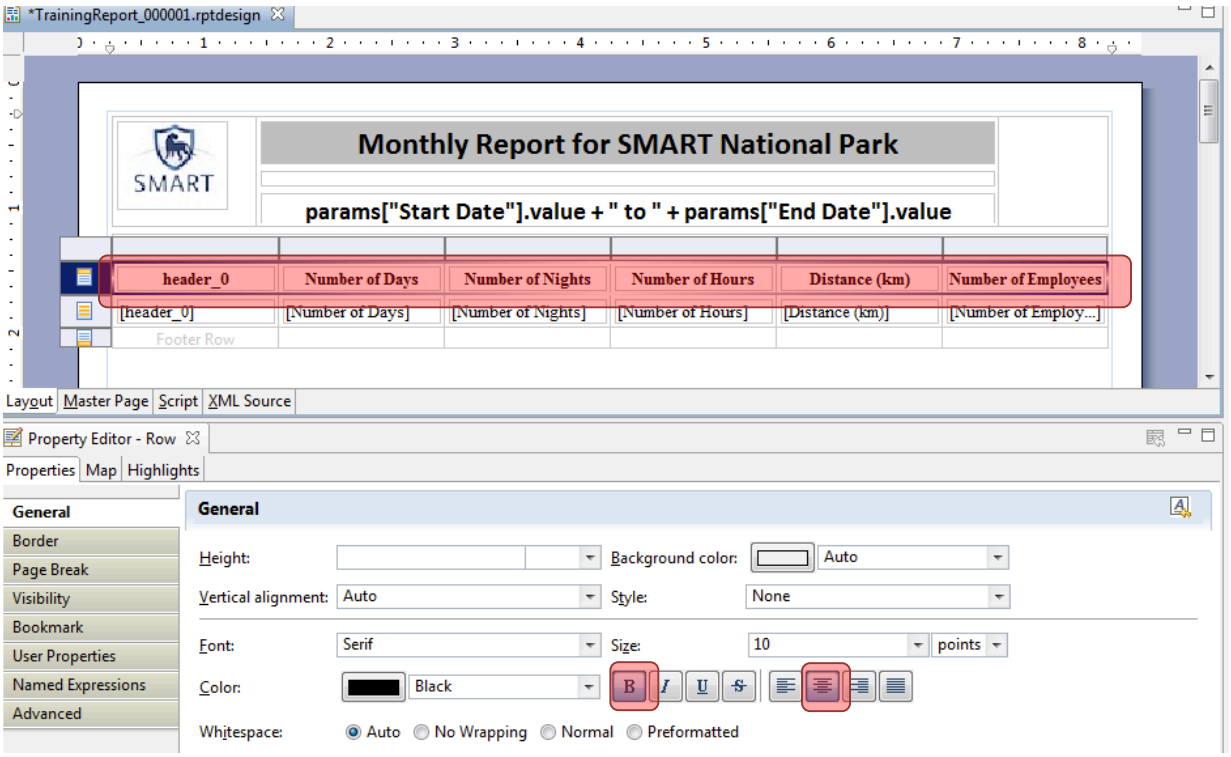
Adding query and summary tables

- In the **Report Outline** under **Datasets** select '**Patrol Effort by Patrol ID**' and drag it into the Report Layout



Number of days – text without square brackets means you can edit the text as you wish
[Number of days] – text in square brackets should NOT be edited. This will automatically be populated from the SMART database when the report is run

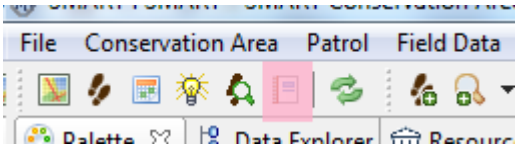
- Using the **Property Editor** in the lower window, change the text, font and other properties of the column headers as you wish



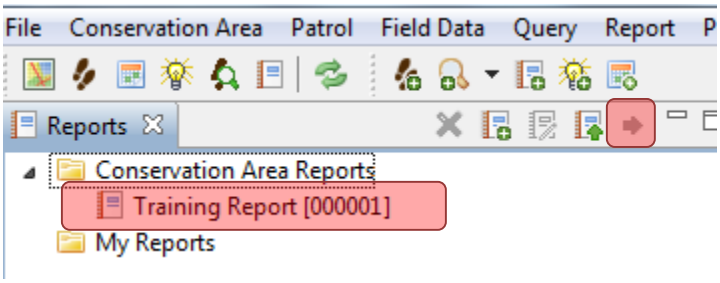
- Select the whole data table (click on the **Table** tab directly below the table)
- In the Property Editor select **Border** on the left
- Add borders to the table as you wish

- **Save the report – IMPORTANT !**

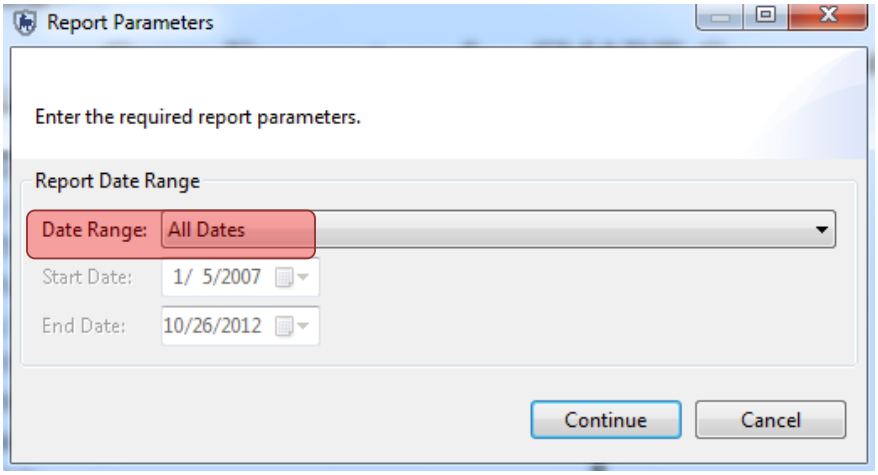
Now that you have added some data, you can run the report to see what it looks like.



- Click on the Report icon to return to the main report screen

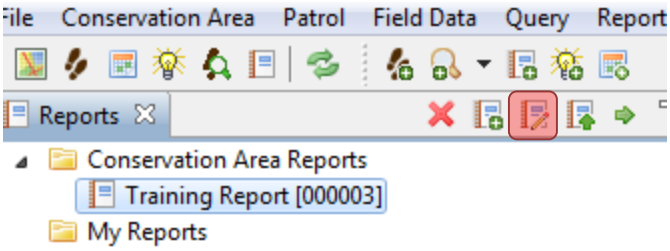


- Select **Training Report** and click on the icon to Run the Report



- Select **All dates**
- **Continue**

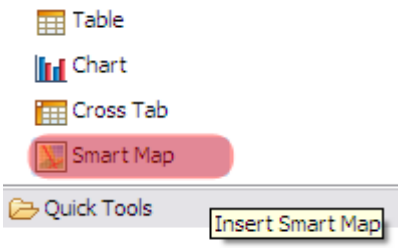
Wait for the report to run – it will show in the window on the right



- To return to edit the report, click on the icon **Edit Report**

Adding maps to the report

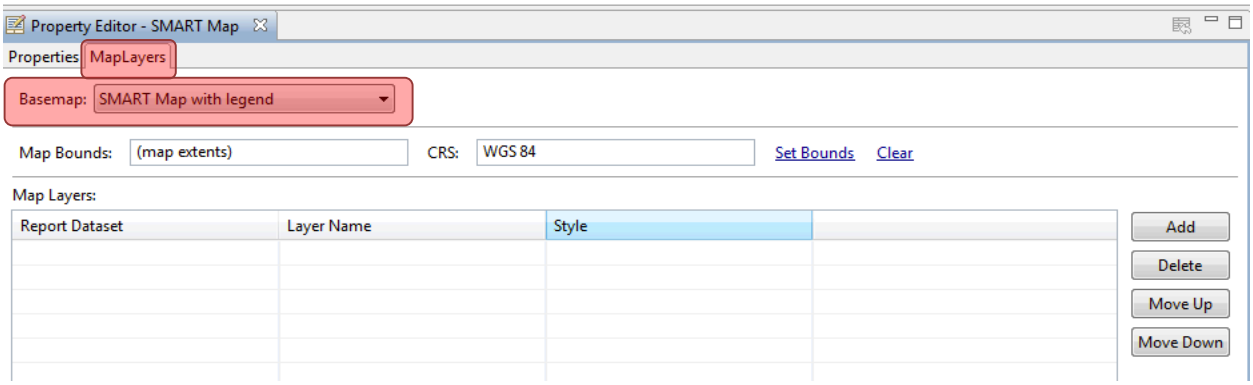
In Module 4: Queries and Summaries you explored the options for viewing the results of the queries with both a table and map view. In this report, you have added the table results and now it is time to add mapped results.



- Add a **grid (1x1)** directly under the patrol effort table

- **Under Report Items – drag the icon for SMART Map into the layout window**
- **Re-size the map** and make it fill the width of the page

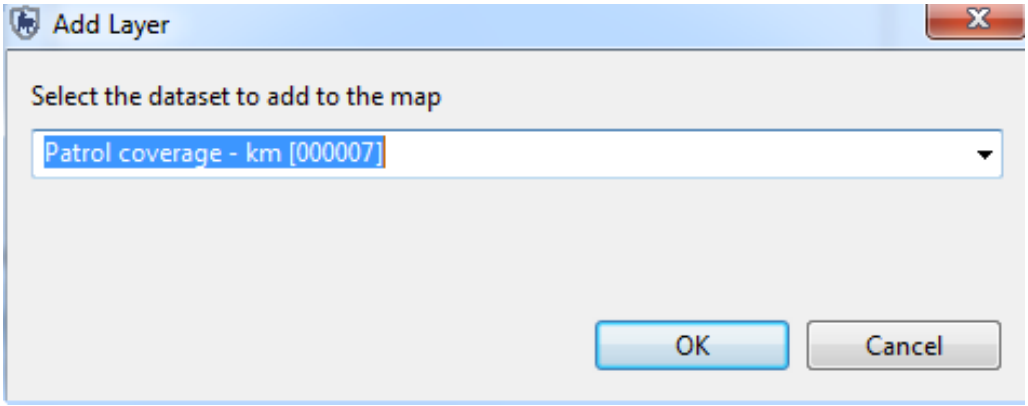
The map object has been added and resized and now you will need to have the map object reference a Basemap and dataset.



- In the Property Editor window switch tabs from Properties to **Map Layers**
- On the Basemap menu select **SMART Map with legend** from the pull-down list
- Click **Add**

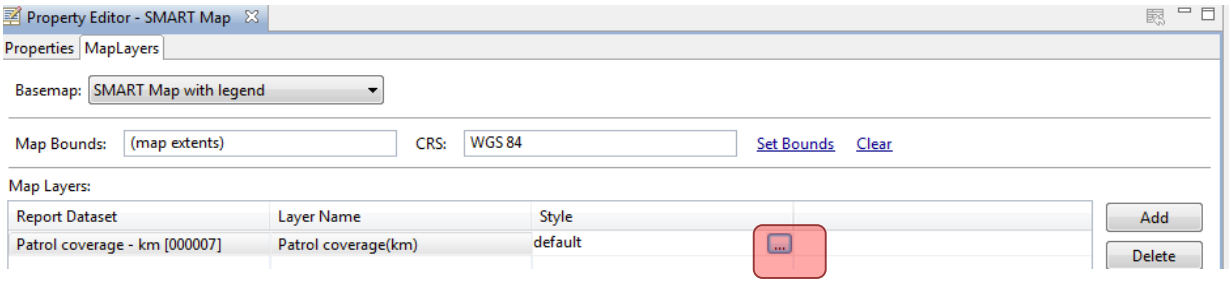
The **Add** Layers button brings in query results overtop of the saved Basemaps.

***Note**: More than one query result can be added to the report's map object.*

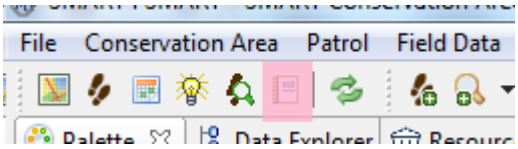


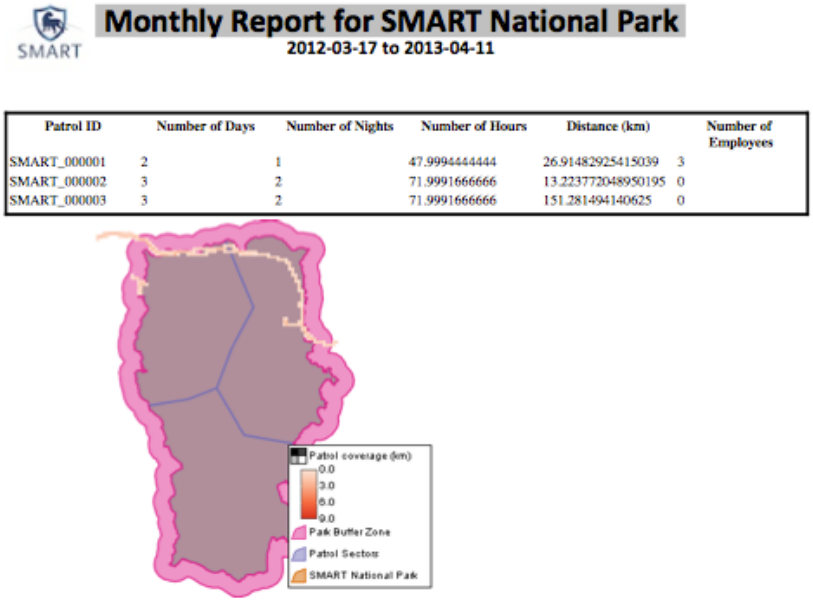
- Select **Patrol coverage - km**
- **OK**

You will now add a style to the map layer.



- Under layer name – click to rename the query in the legend
- In the Style cell click the **icon** on the right to bring up the Style Editor
- Change the style settings following the same process for gridded queries in Module 4
- **Save the Report – IMPORTANT !**
- Now return to the Report screen and run the report.

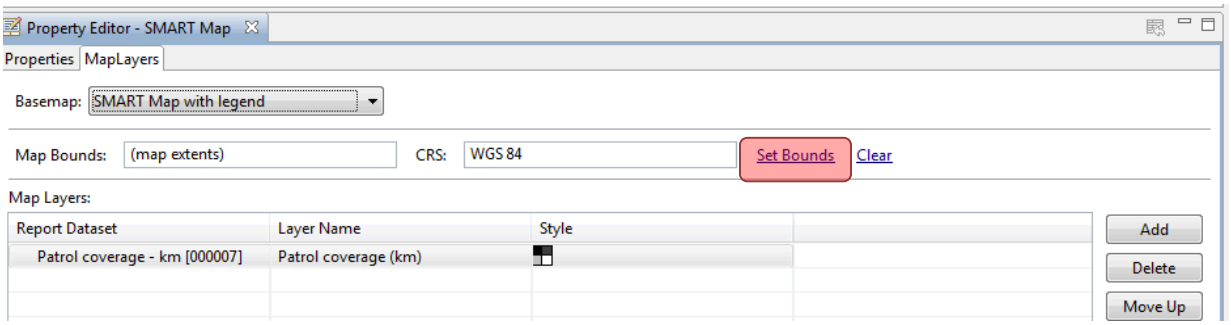




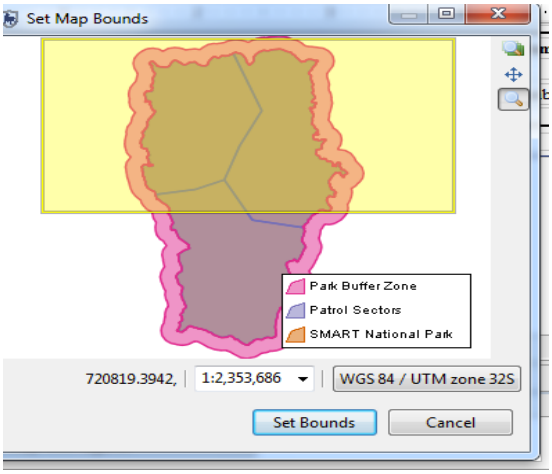
Changing View Extents for the Map

The default view extents for a newly added map object is the entire area of the Basemap. At times you might find it useful to change the view extents to highlight a specific portion of the Conservation Area.

- Return to **Edit Mode**



- Select the **SMART Map** in the **Report Layout**
- Click on **Map Layers** in the **Property Editor**
- Select **Set Bounds**
- With the zoom tool, define the area you want to appear in the map

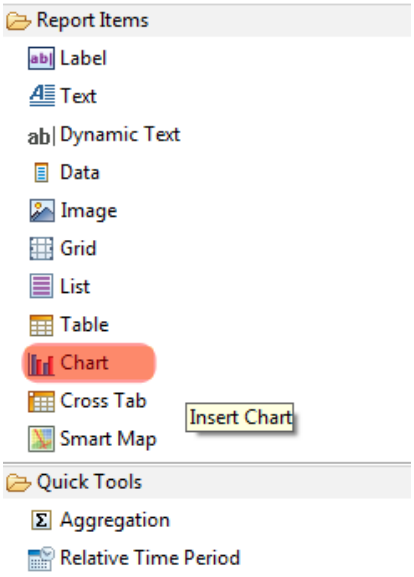


- Click **Set Bounds**
- **Save Report**
- Re-run the report

Adding Charts to the Report

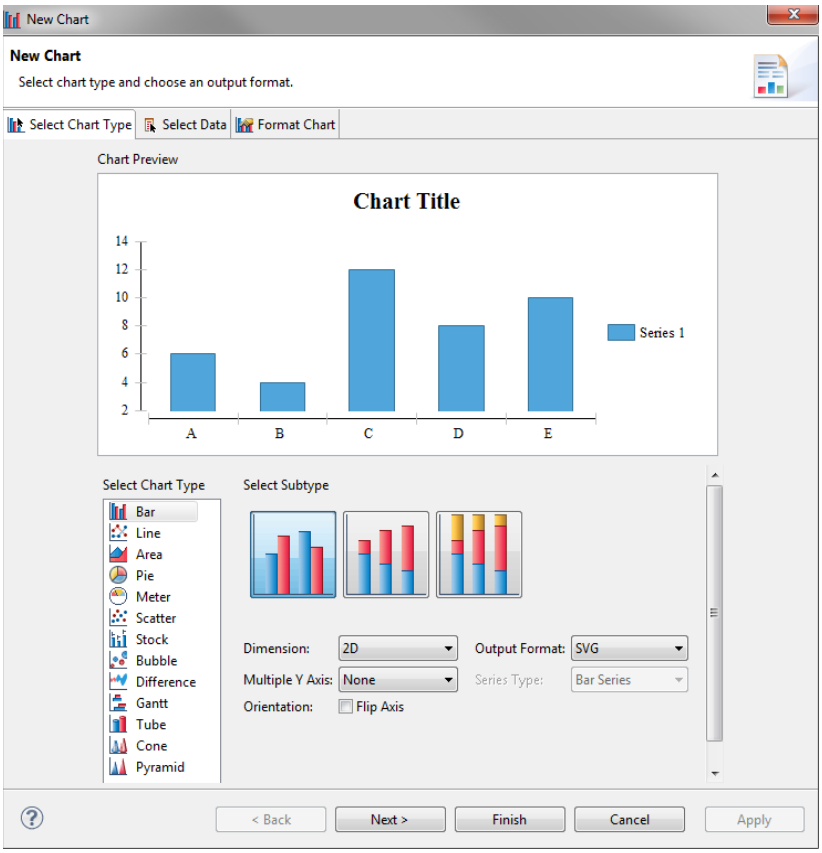
Charts add another option of visualization for SMART reports. Adding charts to SMART follows the same process as other Report objects.

Now you're going to add a bar chart that shows the number of patrols by different means of transport:



- Under **Report Items**, select **Chart** and drag it into the Report Layout window

After placing the chart object in the report designer window SMART will open a dialog wizard to guide users through the steps to set up a chart. The default chart is a Bar chart, which will be the one used in the following example. Other chart types are available and can be selected in the "Select Chart Type" window on the left.

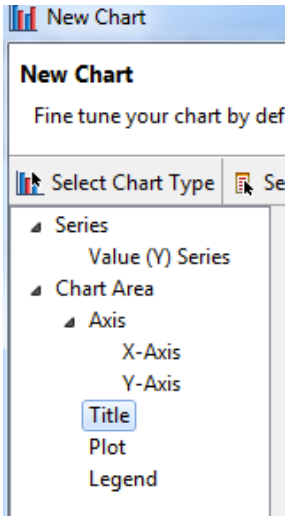


- Keep default settings and click **Next**

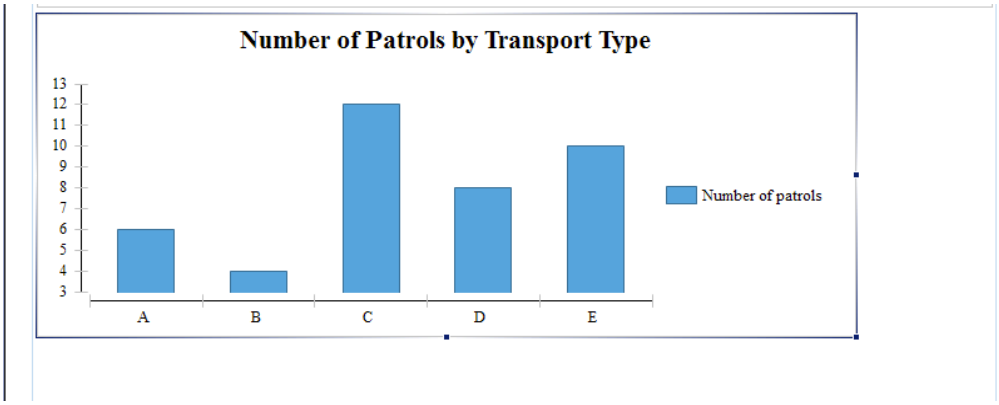
The chart structure has been created but no data has been assigned to populate the chart. The next couple of steps are to define the data source for the chart and to assign the X and Y components of the chart.

1 In the section **Select Data**
   a. Check **Use Data from**
   b. Select **Patrol effort by transport type** in the drop down menu of data sets
2 In the Data Preview window below, select **Number of patrols** and drag it under **Value Y Series**
3 Select **Header_0 (Patrol ID)** and drag it under **Category X Series**
4 Click **Next**

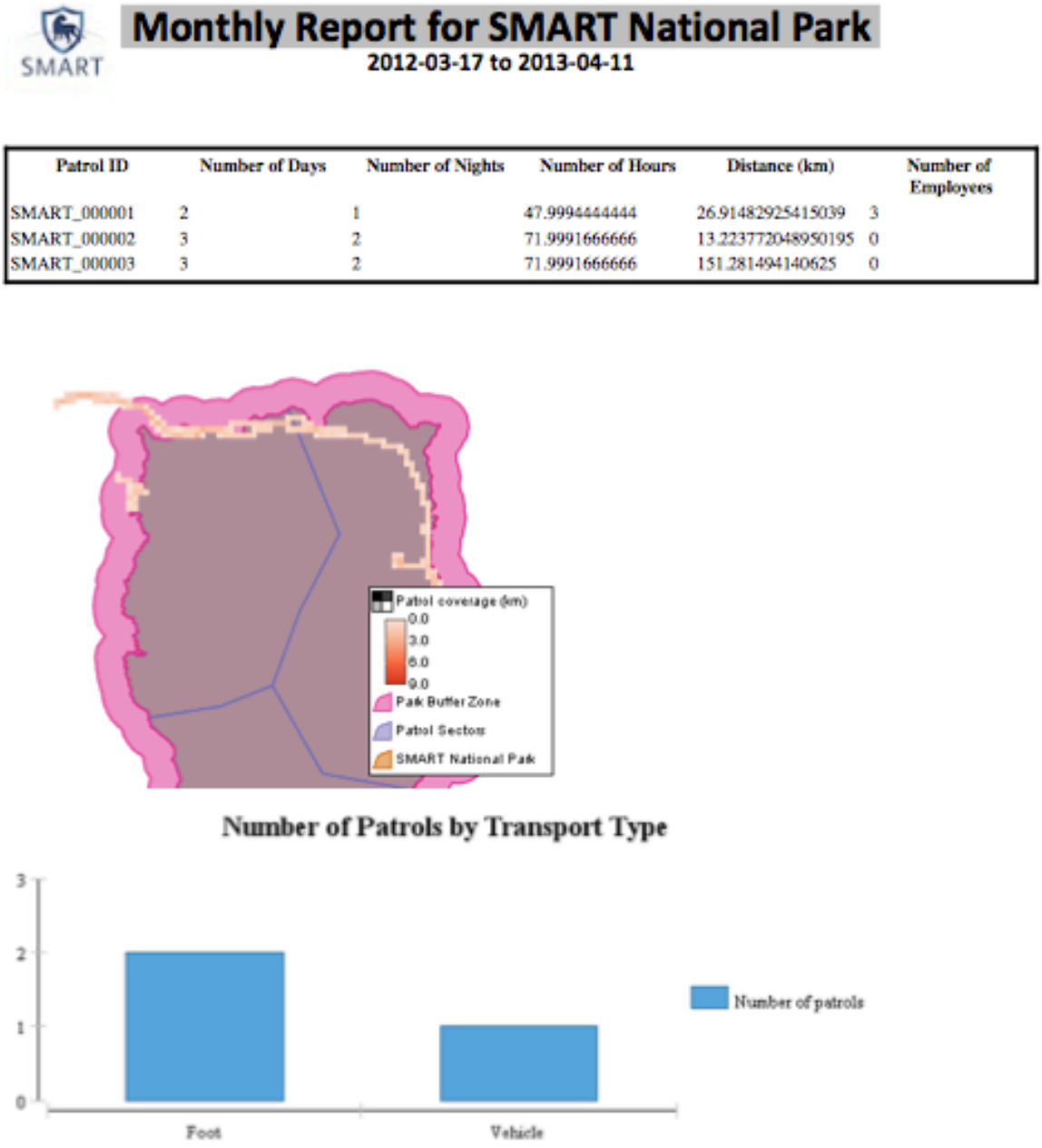
- For the title of Series Y : **Number of patrols**



- In the left-hand menu bar, select **Title** for the chart
- Enter **Number of Patrols by Transport Type** as Chart Title
- **Finish**



- **Re-size** the chart in the Report Layout
- **Save Report**
- Re-run report

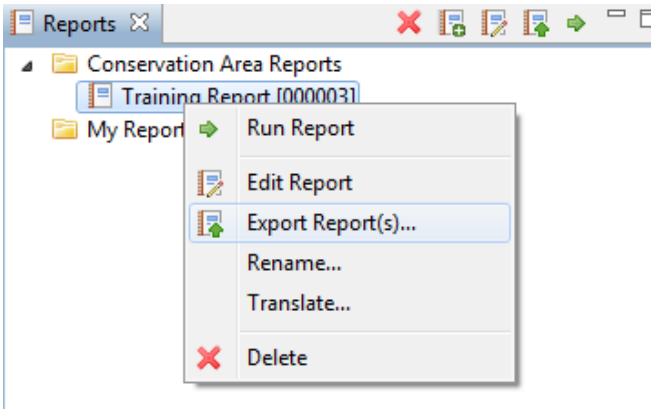


Exporting Reports

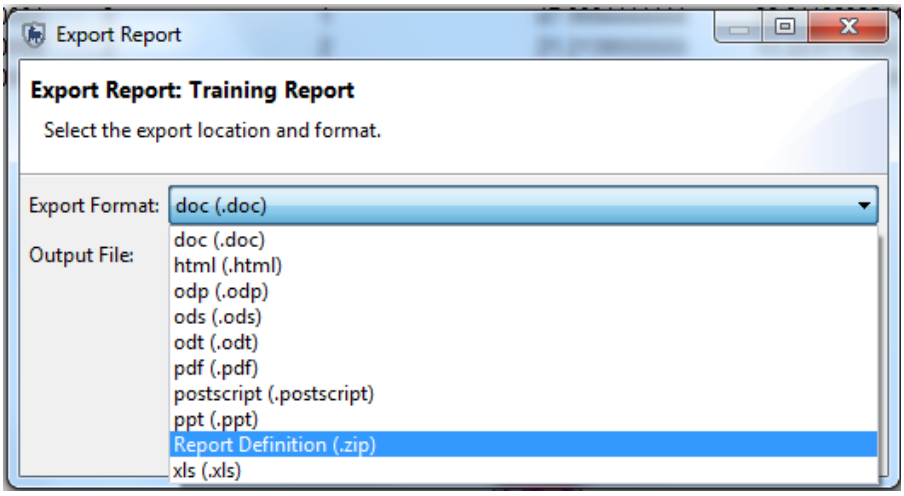
Reports can be exported in a variety of formats (e.g. PDF, Word document etc), which then can be used for easy distribution or importing into other applications. In addition to being able to export/import patrols, queries and summaries, SMART can export report definitions that can be imported into another installation of SMART. This feature allows for a template to be built and then distributed to other databases or offices to reduce the effort in creating new reports and to ensure standardization.

Report Definition

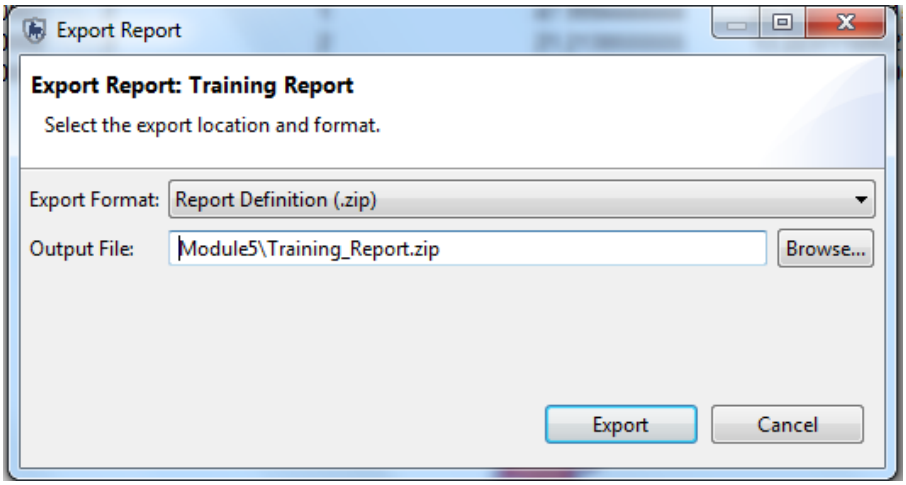
A Report Definition zipfile is a complete package that allows for other installations of SMART to import the report and its dependencies. A report can contain images, queries and other report objects and the report definition file bundles these together to make for easy importing into another system.



- In the Report List right-click the mouse to bring up the **Export Report** option



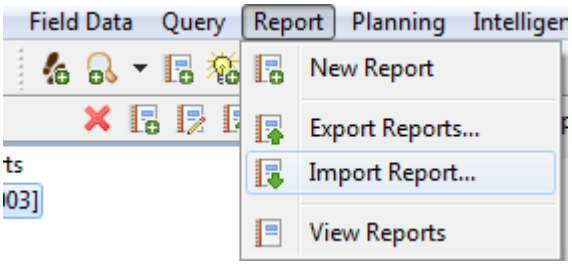
- Select **Report Definition (.zip)**



- Browse to **Module 5**
- Save the **Training_Report.zip**
- **Export**
- **OK**

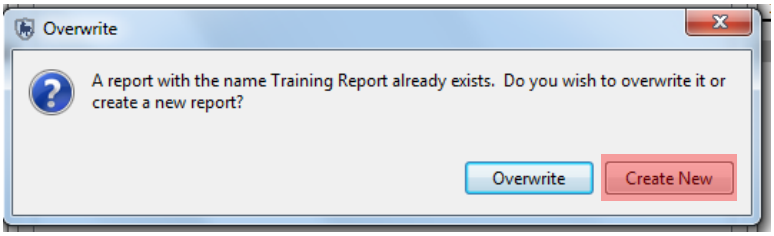
Importing Reports

After the report has finished exporting, you will import the report definition back into your installation of SMART and rename the report. Imported reports will also import any queries, summaries and other report objects if they do not currently exist.

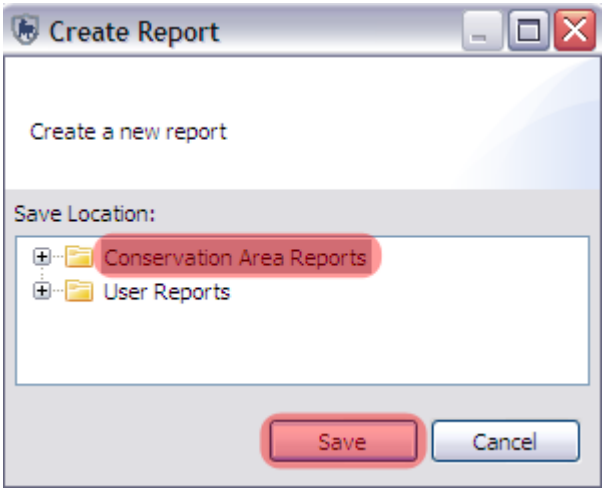


- Under the Report menu, select **Import Report**
- Select **Import from File** and press **Next**
- Click **Add** and browse to **Module 5**
- Select **Training_Report.zip** that you just exported
- Select **Conservation Area Reports** as the folder
- Open

Note: SMART will warn you that a report of the same name already exists.

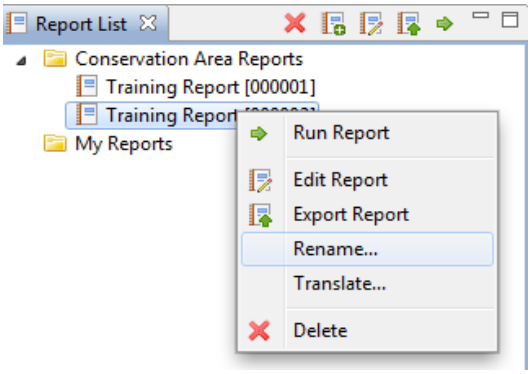


- Click **Create New**
- **OK**



- Select **Conservation Area Reports**
- Click **Save**

You'll now see two reports in the Report List. You can change the name of the second report by right-clicking and selecting 'Rename'. You can then modify as you wish.



<End of Module 5 - Reports>

Module 6 – Planning and Intelligence

This module will guide you through the process of developing plans and to record incoming intelligence from patrols or external sources. Plans allow for a set of targets to be assigned to a patrol or series of patrols and to keep track of available and active rangers. In the second half of this module you will learn the process of tracking intelligence records from information gathered from previous patrols, general public, informants or CET.

Objective:

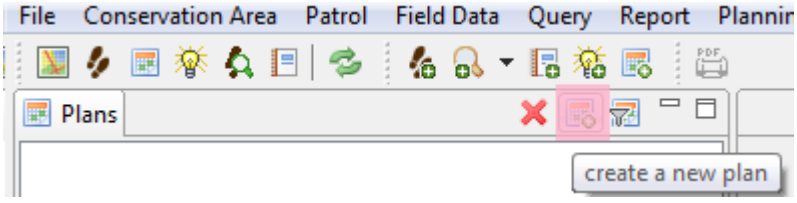
- **Creating parent and child plans;**
- **Developing numeric, administrative and spatial targets;**
- **Linking plans to patrols;**
- **Evaluating plans targets;**
- **Recording intelligence records;**
- **Associating intelligence records with patrols.**

Detailed Steps:

Developing Plans

A plan allows for specific targets and goals be assigned to a Conservation Area, station, team or series of patrols. A plan is created through the use of a similar wizard used to create patrols. After a plan has been created it can be associated with a patrol or series of patrols which then uses the track information to calculate the success or failure of defined targets.

- From the menu select **Open Planning Perspective**



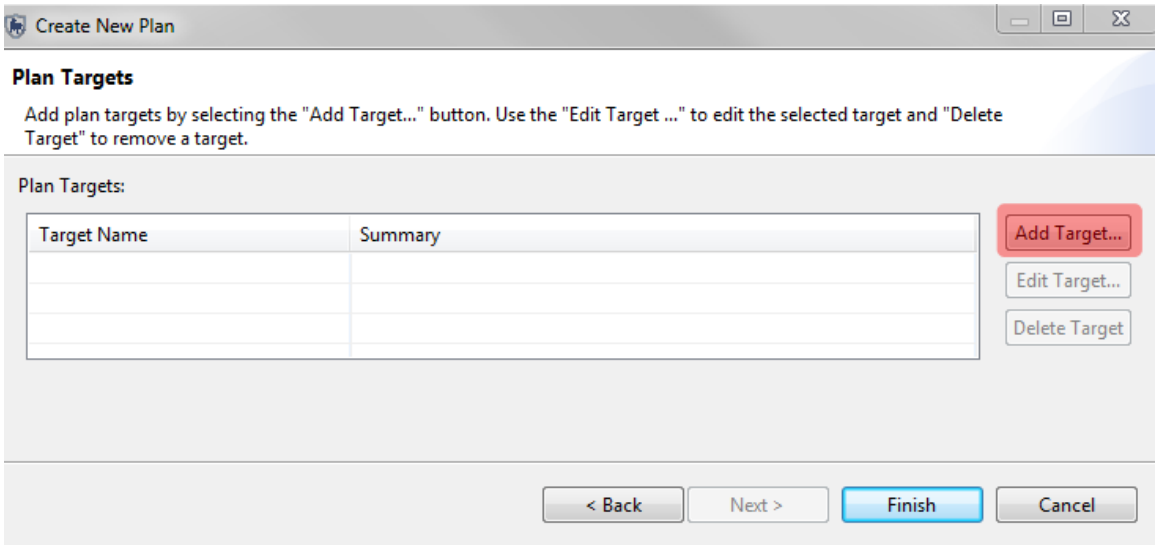
- Click **Create a New Plan** icon

At this point the Plan wizard will appear and guide you through the steps to create a plan. Plans can be generated completely from scratch or by using an existing plan as a template. For this first example you will create one from scratch as there are no existing plans to use as a template.

- Select **Create a new plan from scratch**
- Select Plan Type: **Patrol Plan**

Plans can be set to Patrol Plan, Conservation Area Plan, Station Plan and Team Plan. This allows for grouping of plan types.

- Leave default of Unavailable Rangers set to "**0**"
- **Next**
- Select **No parent plan**
- **Next**
- **Leave default Plan Id**
- Set Plan Name: **Distance Targets**
- Provide a description of the plan
- **Next**
- Select a **Team** and **Station**
- **Next**
- Leave defaults for Plan Dates
- **Next**



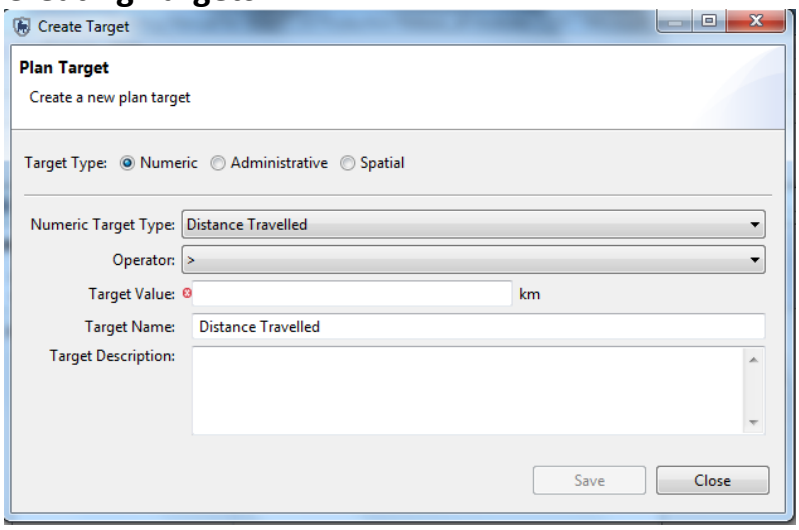
Target Types

Numeric - targets include distance covered by the patrols and duration of the patrols

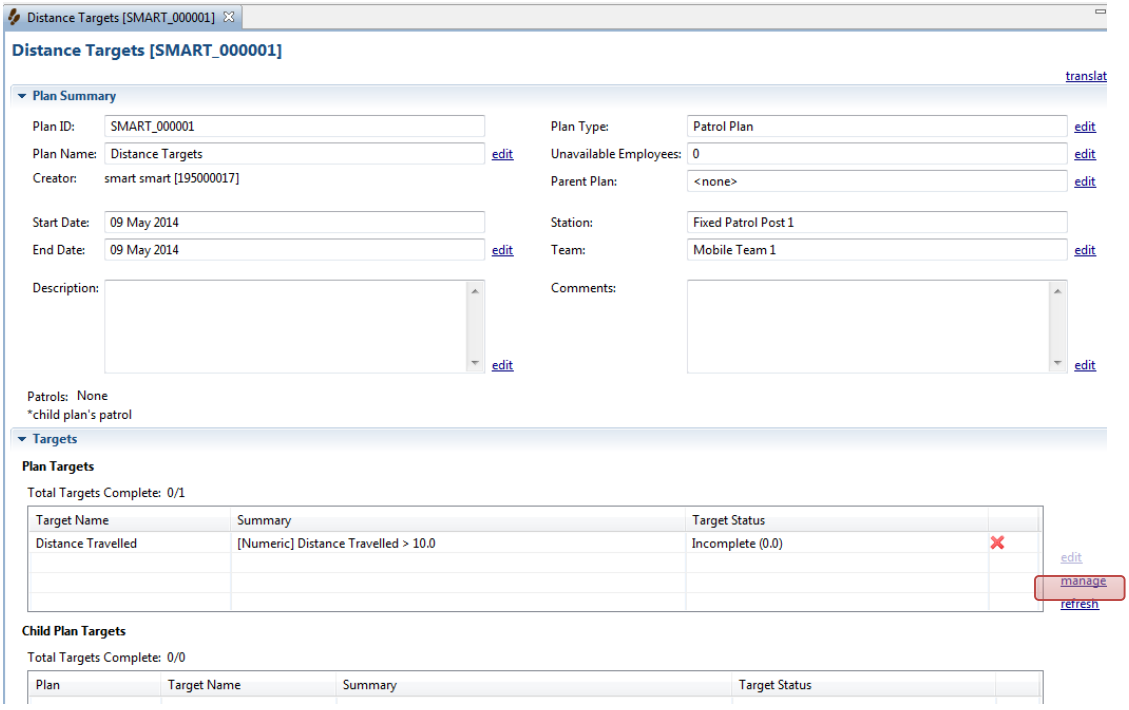
Administrative - user specified criteria for creating targets

Spatial - locations within the Conservation Area that need to be visited by the patrols

Creating Targets



- Select **Add Target…**
- Leave the default of Target Type as **Numeric**
- Leave the default Numeric Target Type as **Distance Travelled**
- Set Target Value = **10**
- Leave the default Target Name as **Distance Travelled**
- **Save** and **Finish**



edit - edits the selected plan target
manage - opens dialog to add new targets
refresh - refreshes validation checks on patrols associated with these targets.

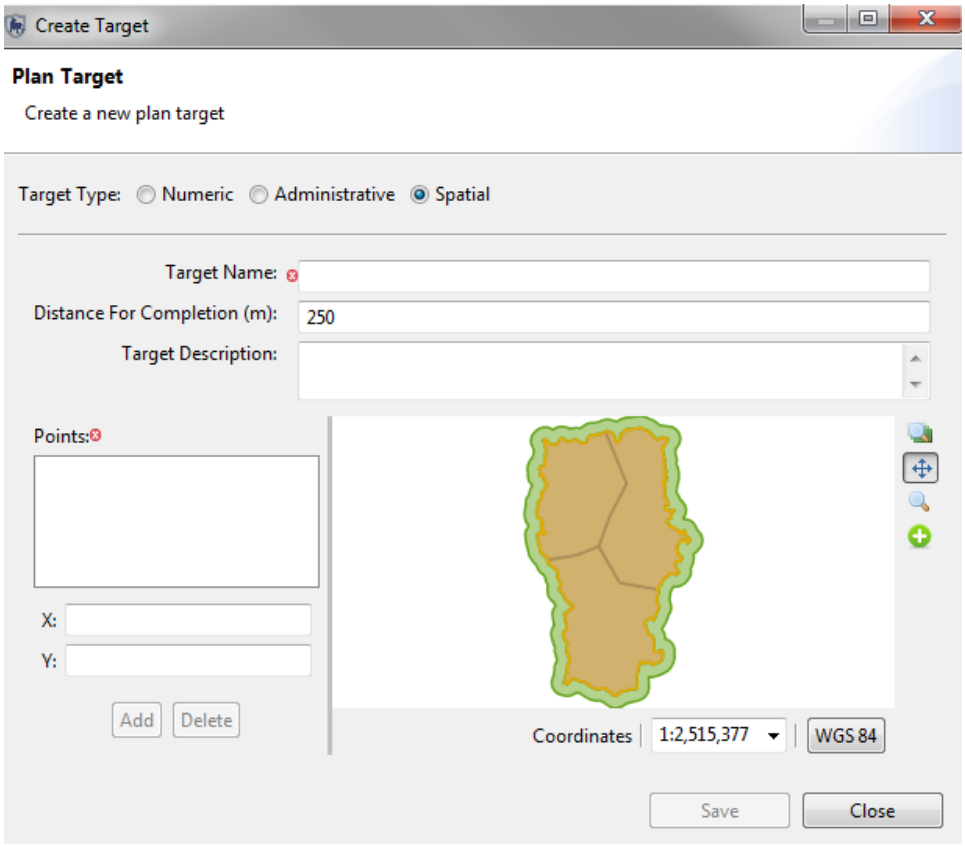
Now you will add two new target types to cover the remaining two options of Administrative and Spatial.

Note: It is not required to have all target types entered for a plan. Also...multiple entries of a single target type can be entered for a single plan.

- Click **manage** (see above highlights for location)
- Click 'Add Target…" and choose type **Administrative**
- Enter in for Target Name: **Made Arrest**
- Enter in for Target Description**: Arrested Poachers**
- Leave default for Target has been achieved as unchecked
- **Save**

Administrative targets can be defined and described as required by the administrators and planners of the Conservation Area patrols. SMART does not automatically evaluate the pass/fail of Administrative patrols. When an administrative patrol target has been achieved the check box for "**Target has been achieved**" will be manually selected.

- Create a new target of type **Spatial**
- Provide a **Target Name** and **Target Description**

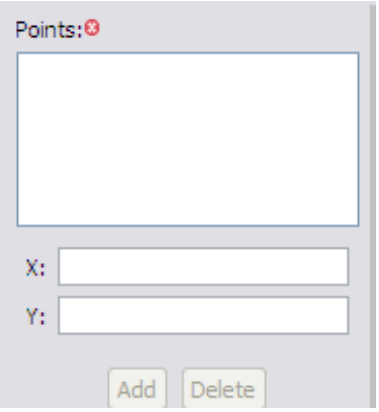


Spatial targets involve entering the location of where the patrols are required to visit for the target to be successful. The Distance for Completion (meters) parameter is how close to the exact coordinates the patrol needs to be before the target location is successful.

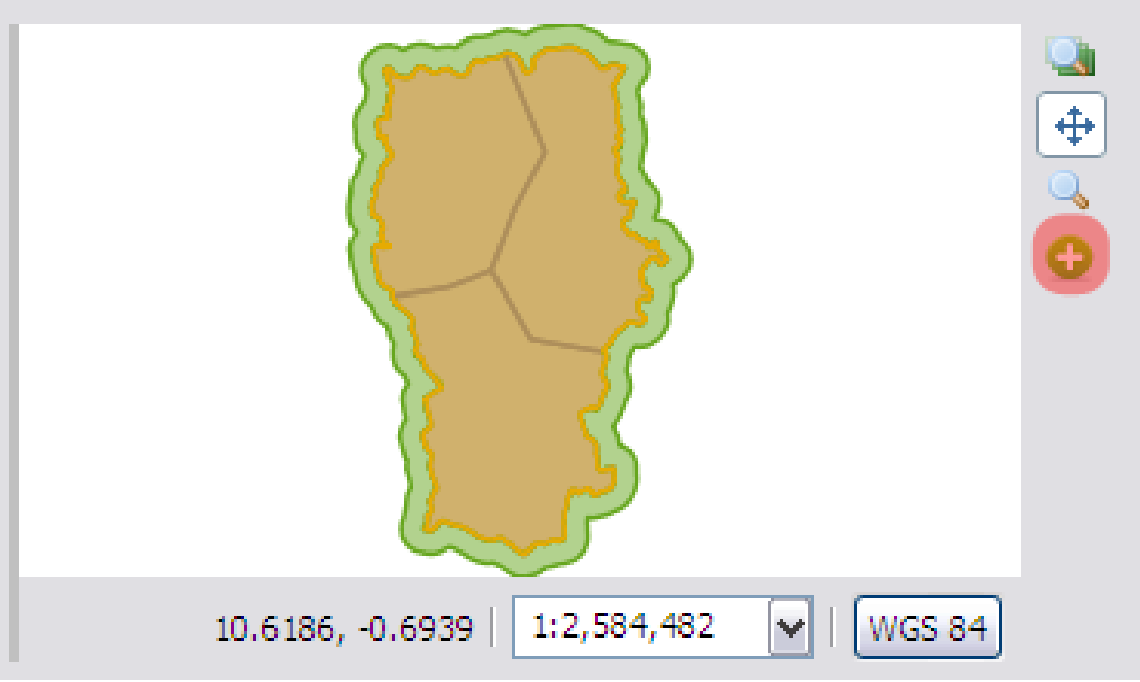
Note: This parameter is set by default to 250 meters. It can be manually changed on this screen or the default value for the Conservation Area can be set by the menu selection of "File – System Preferences". In System preferences the entry for "Smart Plan Configuration" is the location of this default value.

- Provide a **Target Name**
- Leave the default value of Distance to Completion (meters) set to **250**

Smart has two options for selecting point locations for Plan targets. If the exact location is known then the values can be entered on the left.



If the exact location is not known then the Smart patrol planner can enter in location using the mapping interface using the add Plan Point icon.

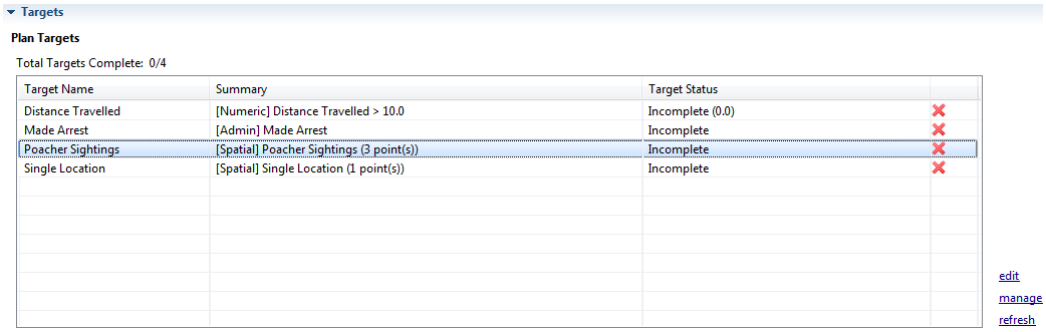


- Select the Add Plan Point Icon
- Add a few points in the mapping window

- **Save** and **Close**

- Create a new spatial target using the coordinates **(X=11.2828, Y=-0.2144)**
    - Provide your own name and description, leave the default distance to 250 meters

Linking Patrols to Targets

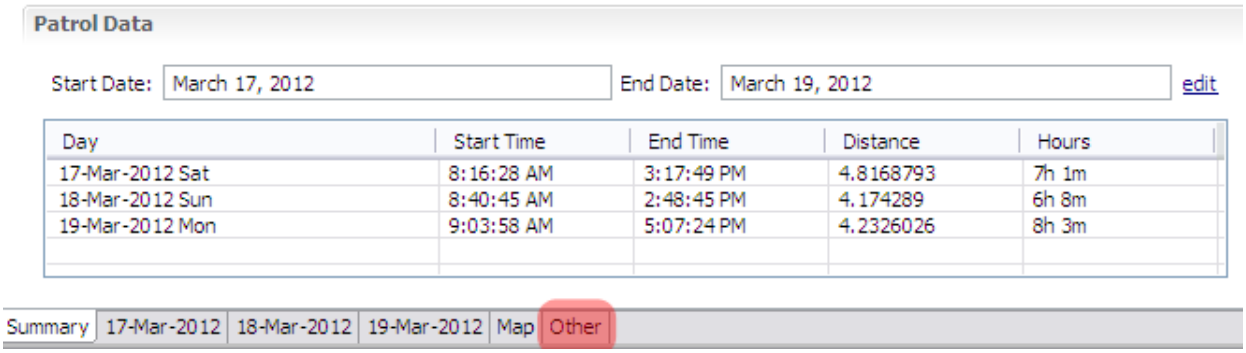


Note: The status indicators on the right are all showing red crosses indicating a failed target. This is because there are no contributing patrols to these targets.

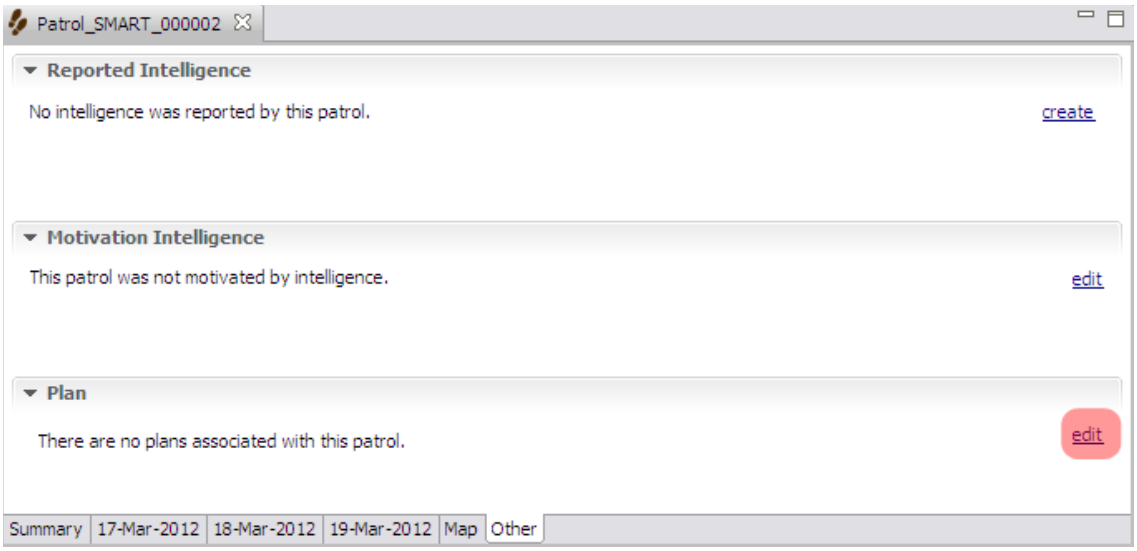
Now that a plan has been created and has targets assigned the next step is to associate the plan with a patrol.

- Return to the **patrol perspective**
- Double-Click on patrol **(SMART_000002)** to open it

Note: Remember to change the patrol date filters to see all the patrols in this Conservation Area.



- Click the **Other tab** at the bottom of the Patrol Summary window



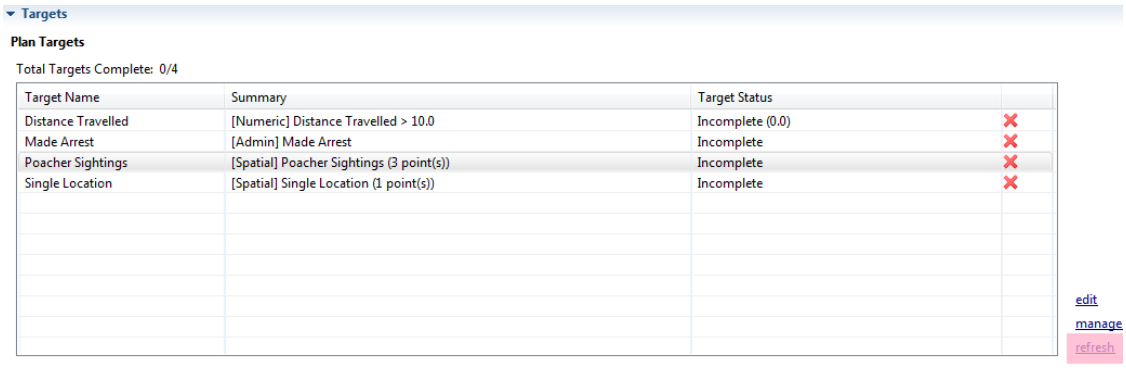
Now to link this patrol with the plan created in the previous steps.

- Click the **edit link** to the right of the Plan sub-section
- Select the plan that was previously created
- **Save** and **Close**

At this point you now have your plan linked to a single patrol.

Note: It is possible that multiple patrols can contribute to achieving the plan targets. For this exercise you will evaluate the success of the patrol by having it linked to a single patrol.

- Return to the **Planning Perspective**
- Double-Click your plan to open it



You should still see the target status indicators set to red.

- Click **refresh** to recalculate the target validations

The distance travelled target and the manually entered location status should change to Completed with the status indicators changing to a green tick. Depending on the locations of the spatial targets entered using the mapping window that target could have changed to a tick as well.

The [Admin] target will only change when the status for that target is manually changed.

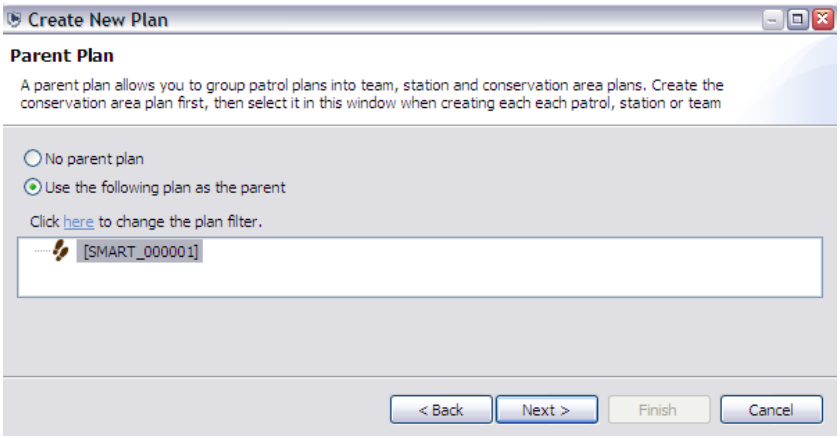
- Click **manage** to open the dialog to add, edit or delete targets
- Select the [Admin] target "**Made Arrests**" and click **edit**

- Click the check box for **"Target has been achieved:"**
- **Save** and **Close**
- Repeat the **Save** and **Close** for the following window
- Refresh the status of the patrols

The [Admin] "Made Arrests" target should have changed from a cross to a tick.
You will now create a new plan that is a child of this plan

- Click **Create New Plan**
- Choose **Use an existing plan as a template** and click **Next**
- Select the **Distance Targets plan** and select **next**
- Leave Plan Type as the defaults
- On the Parent plan screen, select **Use the following plan as the parent** and **select Distance Targets**

Note: If errors are encountered when entering dates, ensure the dates of the child plan fall within the range of the parent plan.



- Create some new targets and link this plan to the other patrols

- Validate the plan targets to see if any of the targets have been achieved
- To see the child and parent plans together reopen the first plan and click refresh (to the right of the child plan window).

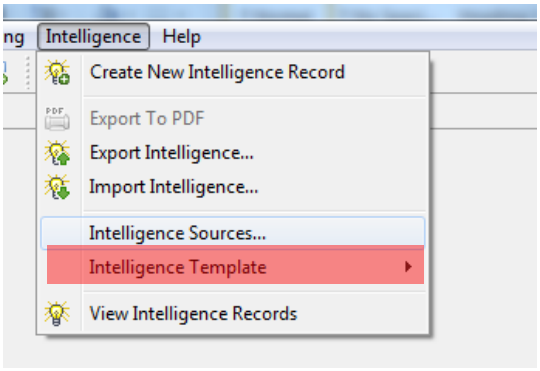
Note: The distance calculations for the master plan take into account the total distance travelled by the child plans.

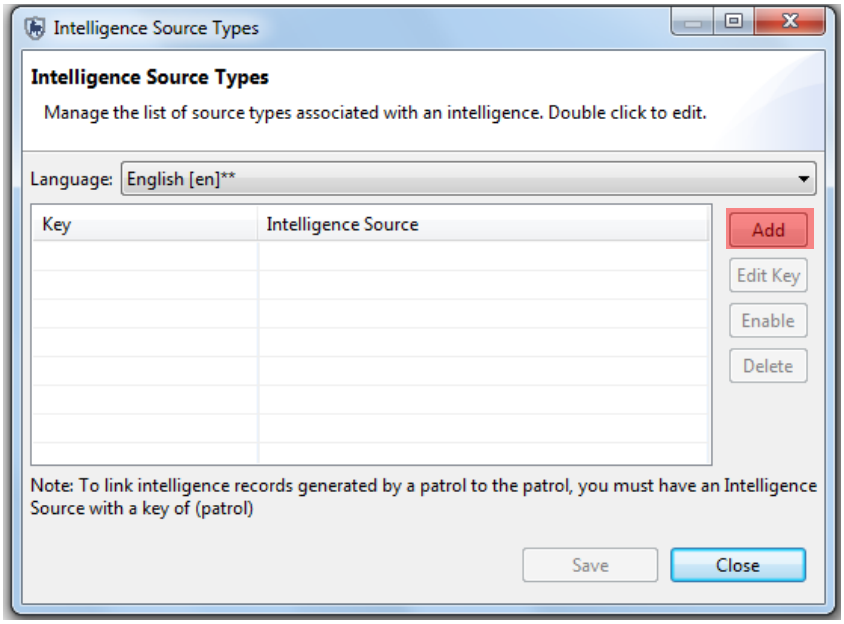
Creating Intelligence Records

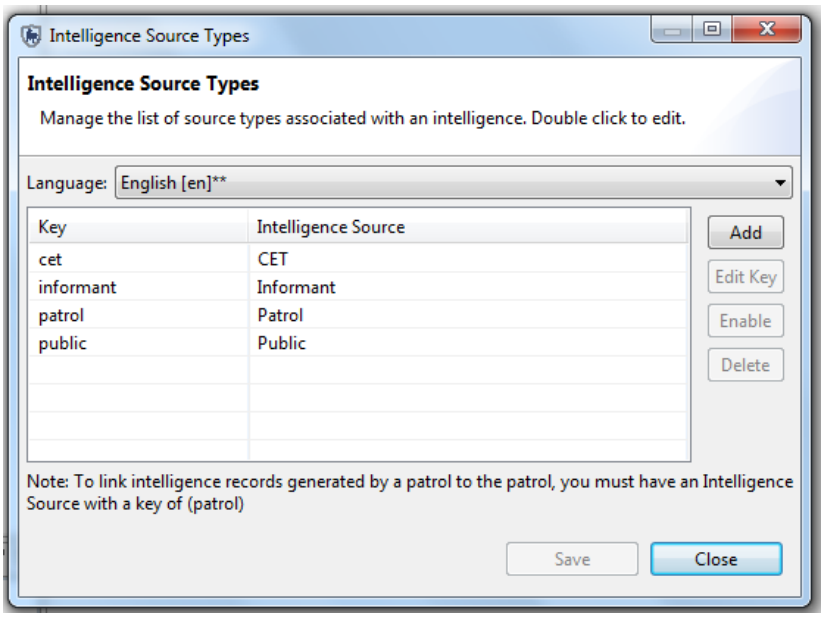
Intelligence records are pieces of information that has been gathered through previous patrols or by external sources. Information from intelligence records can be used by Conservation Area managers to help plan future patrols.

Before you can create a new intelligence record, intelligence source types need to be added.

- Use the menu **Intelligence – Intelligence Sources**
- Select **Add**
- Enter in each intelligence source as seen below (**CET, Informant, Patrol and Public**)

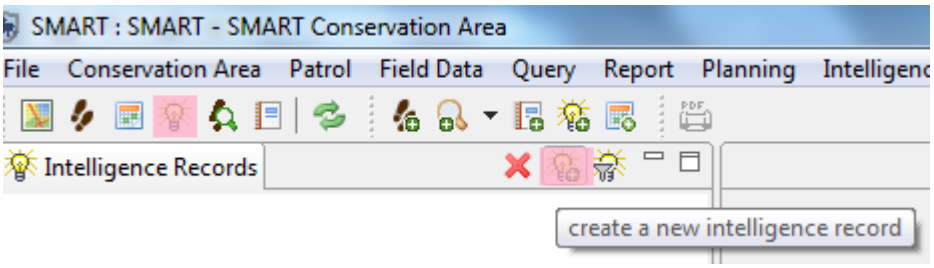






To create a new intelligence record:

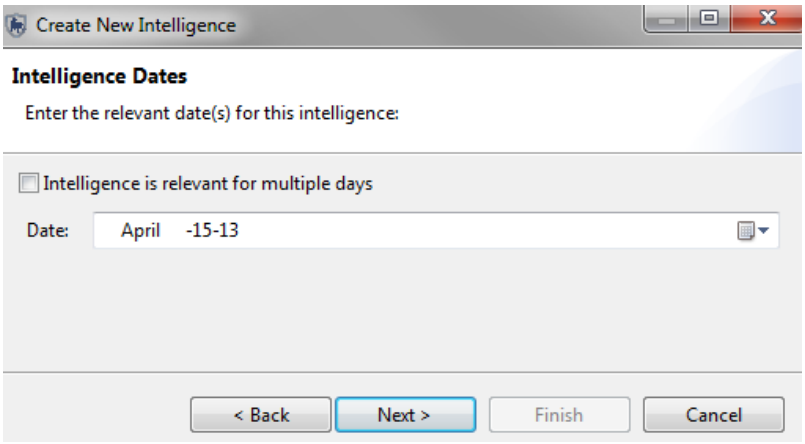
- Use the menu **Intelligence - Create a new intelligence record**
- Keep the default date for **Received Date:**
- **Next**
- Set Intelligence Source: **Patrol**
- Select a **Patrol ID** (if no patrols are listed adjust the time filter to show **All Dates**)
- **Next**



Other options in the Intelligence Source drop-down:
Patrol - gathered directly by a previous patrol
Public - from an unassociated public member
Informant - a person with some ties to the Conservation Area
CET - Community Extension Team (i.e. the separate Forest Department/ NGO team working with local communities)

Note: Only the Patrol choice will require a link to an existing patrol.

Intelligence is relevant for multiple days
If the incoming intelligence is to cover activity that spans multiple days then in this step you should check the box and enter in the appropriate dates. For this exercise you will accept the default day.



- Accept the **default day**
- **Next**
- Type in a **Short-Form Name** and a **Description** of the new information

Example:
Short-Form Name: Night Poaching
Description: Rangers interviewed captured poacher and was informed of a night poaching raid in the North-West to happen on the 15th of May.

- Click **Next** to move to the Intelligence Location window
- Enter in a **point** (coordinates or with map) for a location in the **North-West**
- **Next**
- If there are documents (photos, reports, etc...) then attach them to the intelligence record
- If no additional documents are available then click **Finish**
- Review the intelligence records and if necessary make changes using the **edit** links next to the entry

Querying Patrols with Plans and Intelligence Records

Plans with links to patrols can be queried with a Patrol Query with Patrol Filters. The patrol filter "Motivated by Intelligence" is to query out any patrols associated with Intelligence Records. The patrol filter "Part of Plan" is to query any patrols that were associated with Plans.

- Return to the Query Perspective and build/run a couple queries using these two filters.

<End of Module 6 – Planning and intelligence>

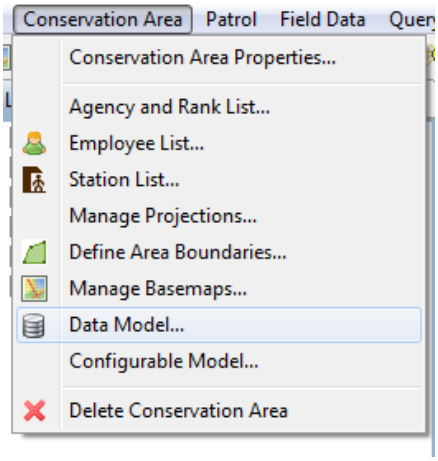
Module 7 – Data Model Management

Objective:

This Training Module will instruct you on how to manage the Observation Data Model within the SMART system. In this module, you will learn how to create, disable or delete categories and attributes in line with best practices and principles of data modeling.

Detailed Steps:

To access the observation data model:

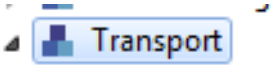


- From the Conservation Area menu, select **Data Model …**

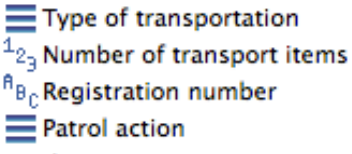
Data Model Overview

The SMART data model structure is based on a tree structure, comprised of nodes (Categories) and a series of 'leaves' or custom attributes that can be associated to any number of the tree's categories.

Note: *For users familiar with MIST: in SMART, Categories correspond to Observations and Observation types in MIST, and Attributes correspond to Observation Remarks in MIST*

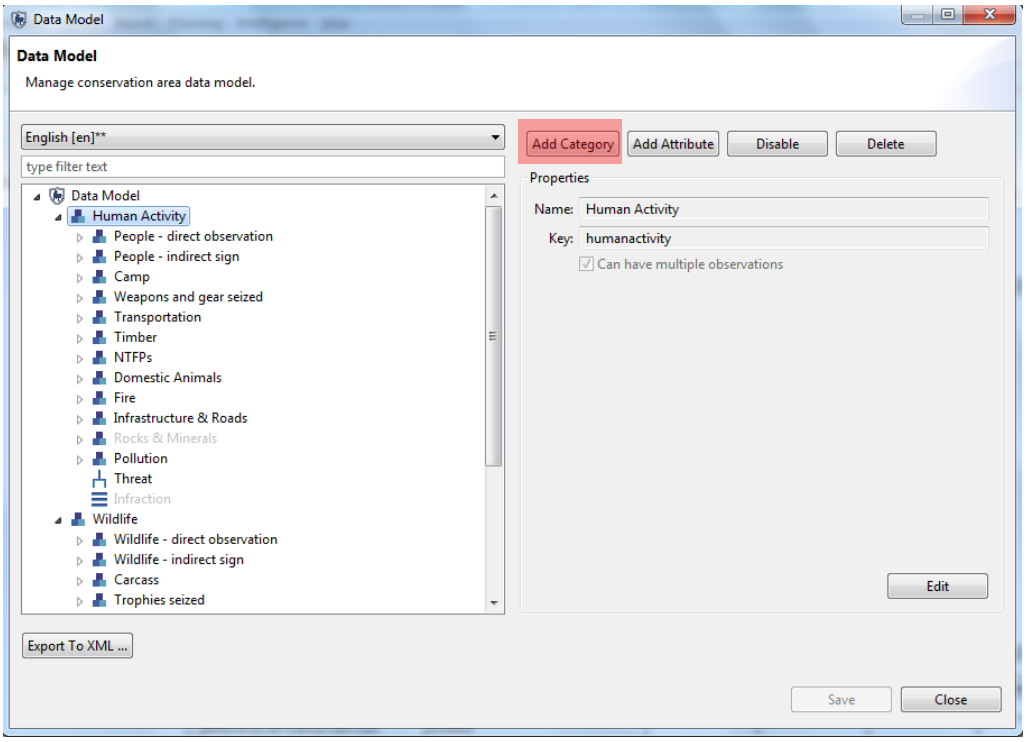
Categories are denoted as: 

Attributes are denoted by values (Numbers, lists, text) :

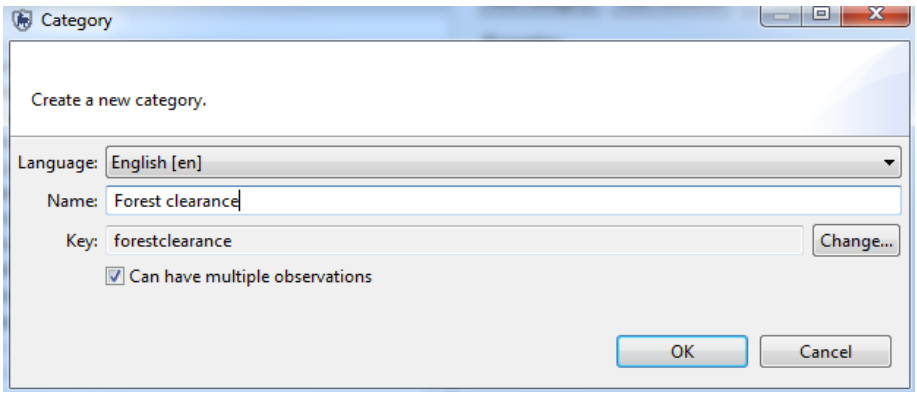


Add a Category to the Data Model

At any level in the data model, new categories can be created, edited, disabled or deleted. In the example below, you're going to create a new category 'Forest clearance', under Human Activity.



- In the data model tree, select "**Human Activity**"
- This will enable the action buttons in the top right
- Click on **Add Category**



- Create a new category called '**Forest clearance'**
- Keep checked "**Can have multiple observations**"
- **OK**

***Note** : The **Key** is created automatically in SMART. Its not recommended to change this unless you're sure you know what you're doing!*

Attribute Types

SMART supports attribute types of Numeric, Text, List, Tree and Boolean. Usage of the attribute types will depend on the nature of the observation information collected in the field.
Examples and recommended usages of attribute types are:

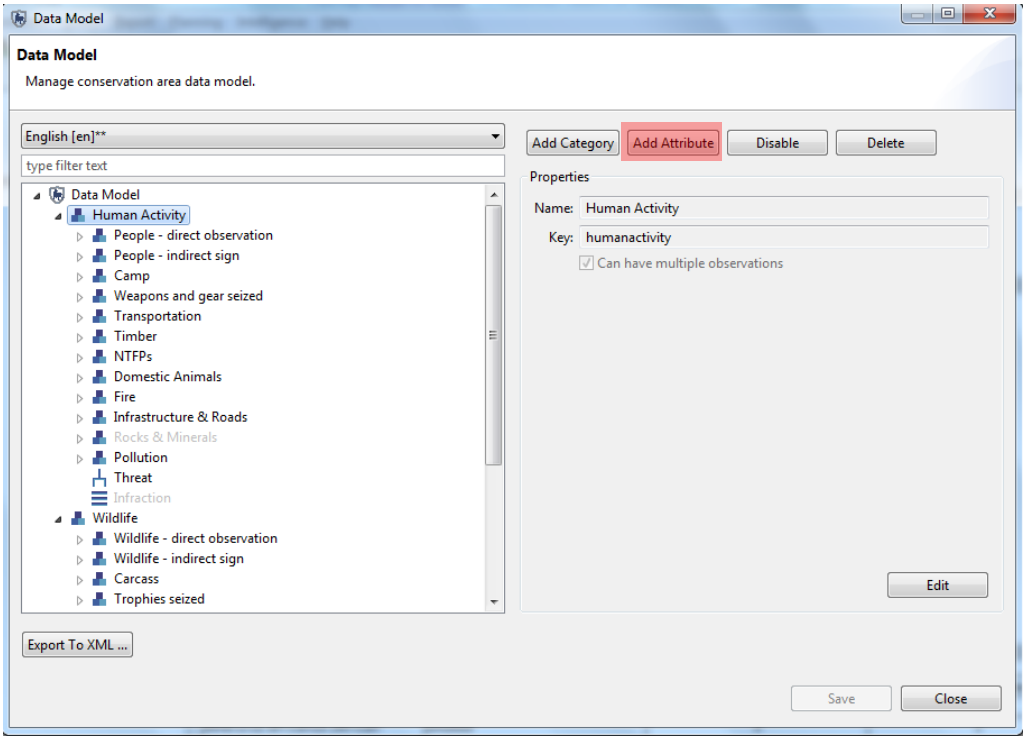
Numeric - widths, lengths, amounts, numbers of animals, people or items
Text - specific names that cannot be preloaded into a list
List - names of items where the list is known and the list is not too long
Tree - a collection of attributes that can be arranged in a hierarchical or logical format such as animal species
Boolean - any situation that can be answered with a Yes or No

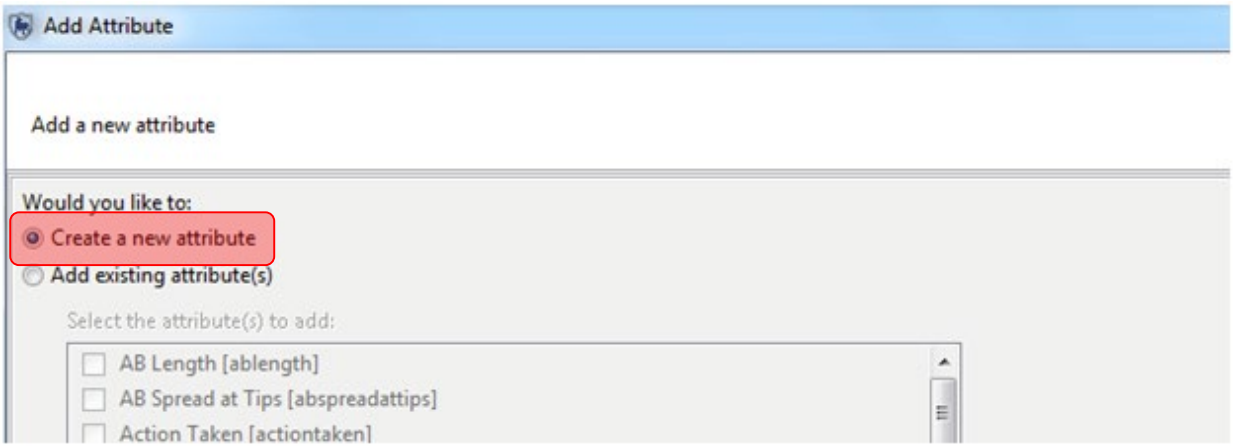
Creating New Attributes

In the category 'forest clearance', you're now going to add two attributes:

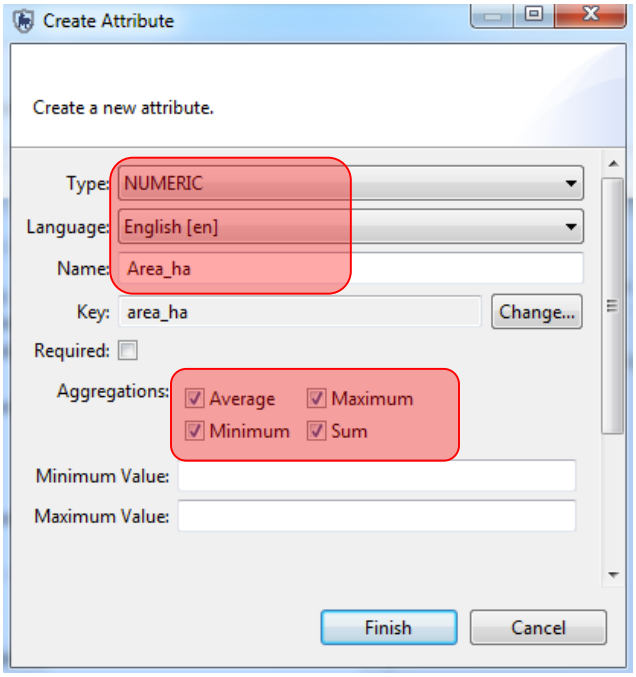
Area cleared in hectares (numeric attribute)
Species planted (list attribute)

- The new '**Forest clearance'** category will now appear under Human Activity
- Select it and then click on **Add Attribute** in the upper right of the window





- Select **Create a new attribute**
- **Next**

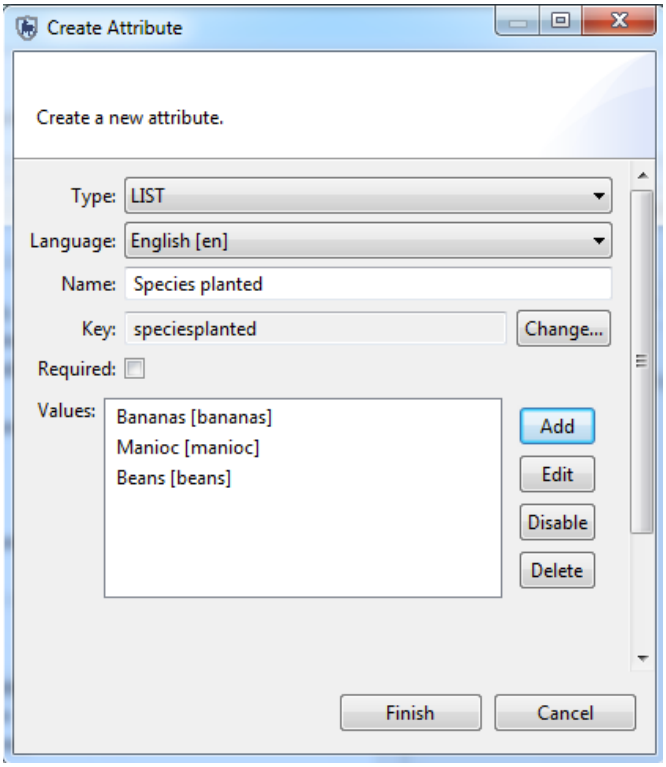


- Create a new attribute as follows:
  - Type = **"Numeric"**
  - Name = "**Area_ha**"
  - Check all options under « **Aggregations »**
  - **Finish**

- The new attribute "**Area_ha**" will now appear under the category Forest Clearance in the data model tree
- Click **Save** (in the bottom right of the window)

- Select the category '**Forest clearance'**

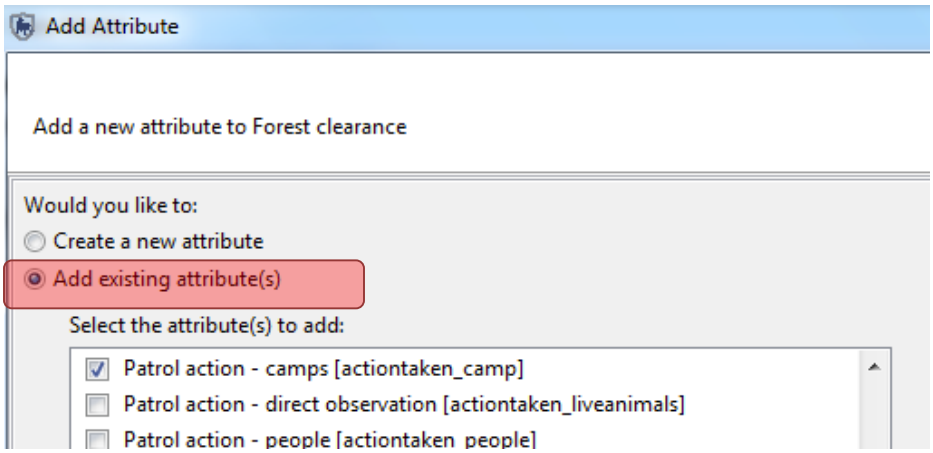
- Click on **Add Attribute**
- Select **Create a new attribute**
- **Next**



  - Type = **"LIST"**
  - Name = "**Species Planted**"
  - Values = "**Banana**", "**Manioc**", "**Beans**" (add them individually by clicking on **Add**)
  - **Finish**

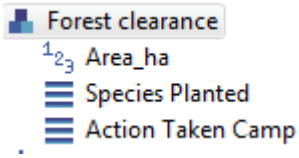
Using Existing Attributes

In addition to creating new attributes, you can also re-use existing attributes



- Select the category '**Forest clearance'**
- Select **Add Attribute**
- Select **Add existing attribute**
- In the list of attributes, select :
    - **Action Taken Camp**
- **Finish**

In the category **Forest Clearance**, you will now see the three new attributes under the category



Disabling and Deleting Attributes

Categories, attributes or values within attributes can all be deleted from the data model, or disabled.

Deletion - Completely removes the feature from the data model. This can only be done if there are no dependencies. A dependency can be a child category, attribute, recorded observation or query/summary. If no dependencies exist, the feature can be completely removed from the data model.

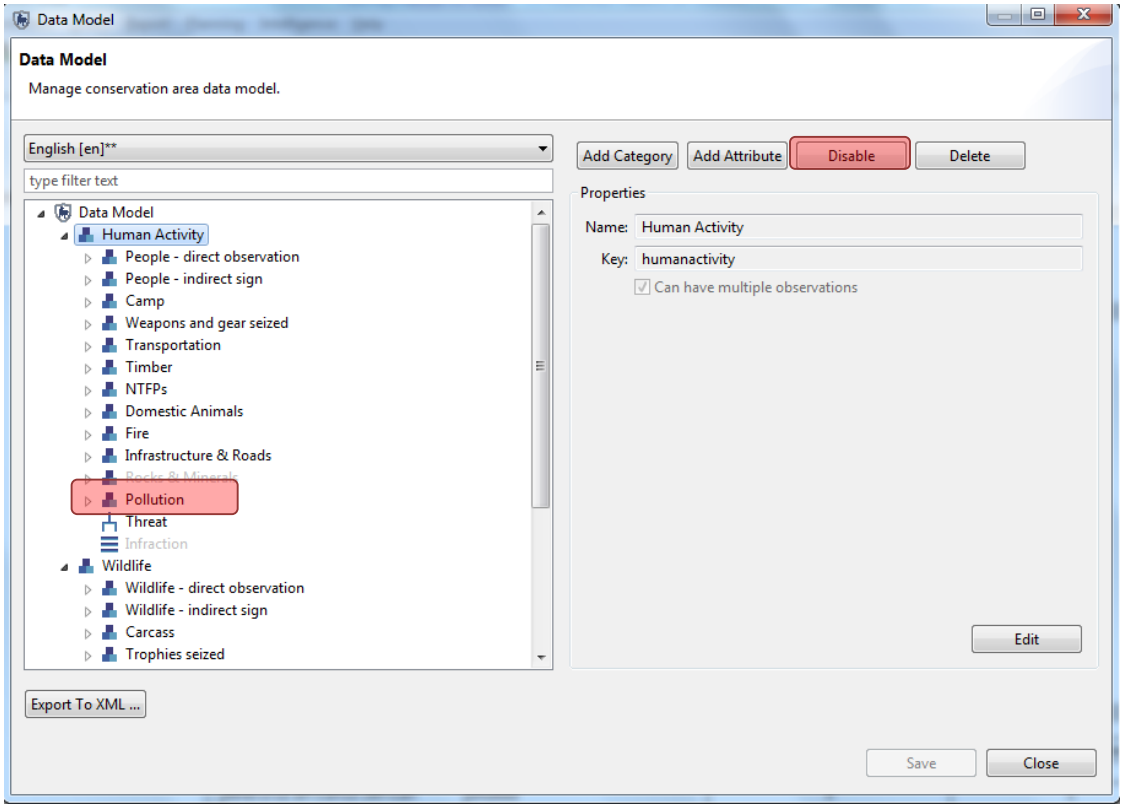
Disable - If dependencies exist or the administrator does not wish to fully remove the feature, it can be disabled. Disabling removes the ability to record any observations based on the disabled feature, but does preserve the ability to perform analysis on the feature.

Note: *If you aren't sure whether to disable or delete – you should always just* ***DISABLE****. You can always re-enable it later on.*

Disabling / Enabling Categories

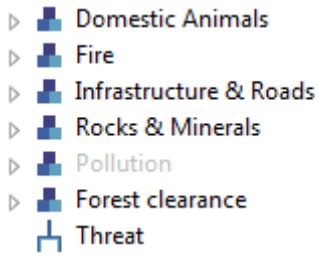
Disabling / Enabling categories is a much easier process because it does not require that all dependencies be disabled before proceeding with the higher level category. It also allows for reintroduction if the need arises.

- Select the category **Pollution**
- Click on **Disable**



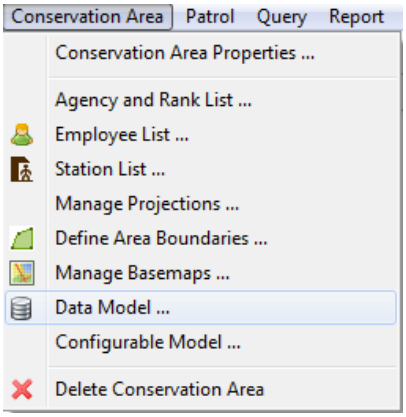
Pollution is now greyed-out in the model. You'll no longer be able to see this as an option during data entry.

You can re-activate it by clicking on '**Enable'**

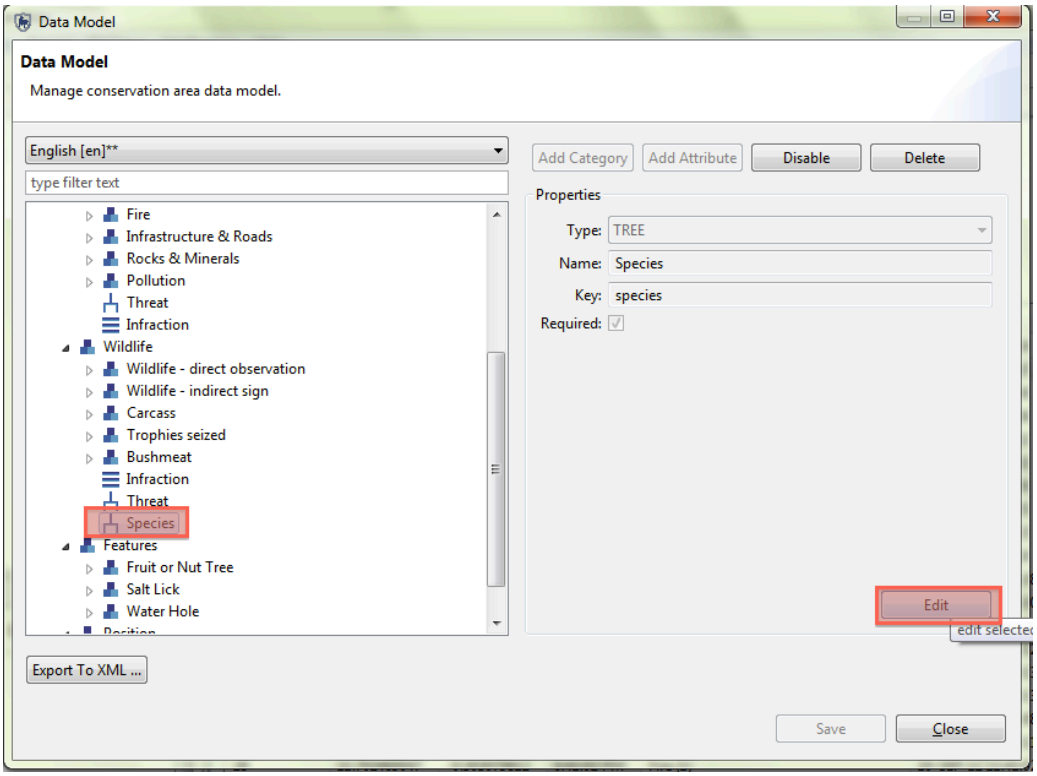


Add species to the Species Attribute

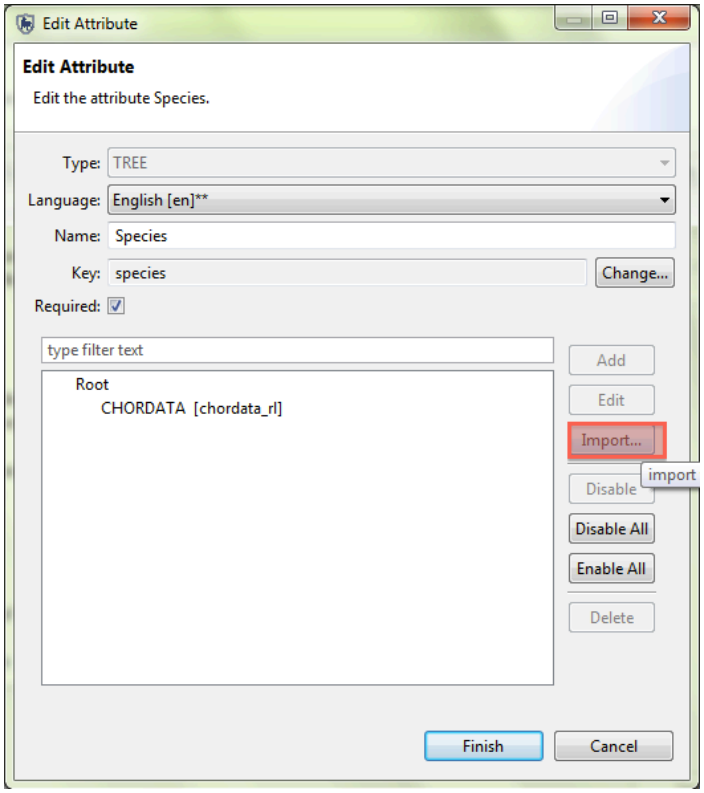
Please note, if you need to add a specific species to SMART that is not in the default list, follow the below steps.



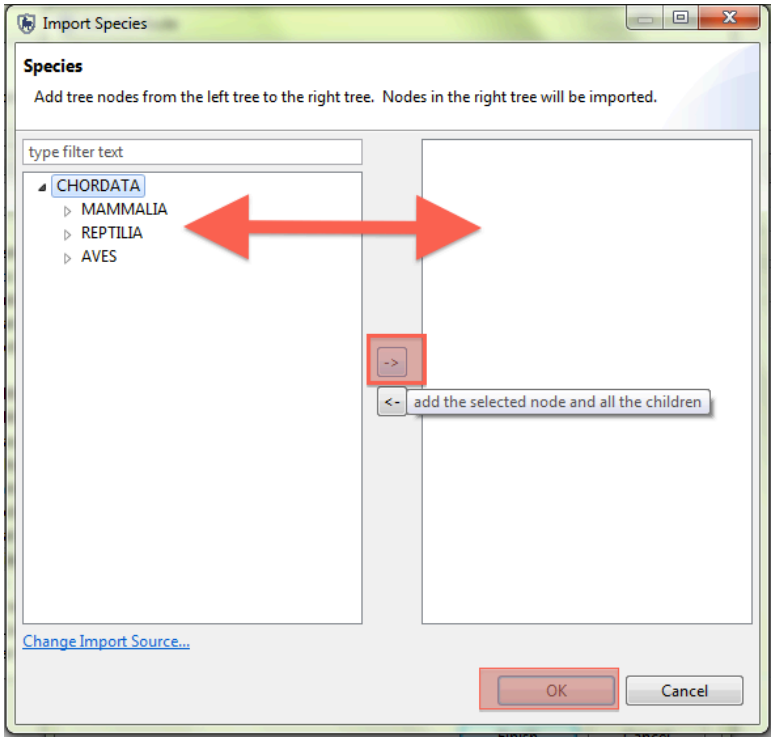
- Click **Conservation Area**
- Click **Data Model**



- Click **Wildlife… Species…**
- Click **Edit**



- Once you are in the Edit Attribute Window… Click **Import**



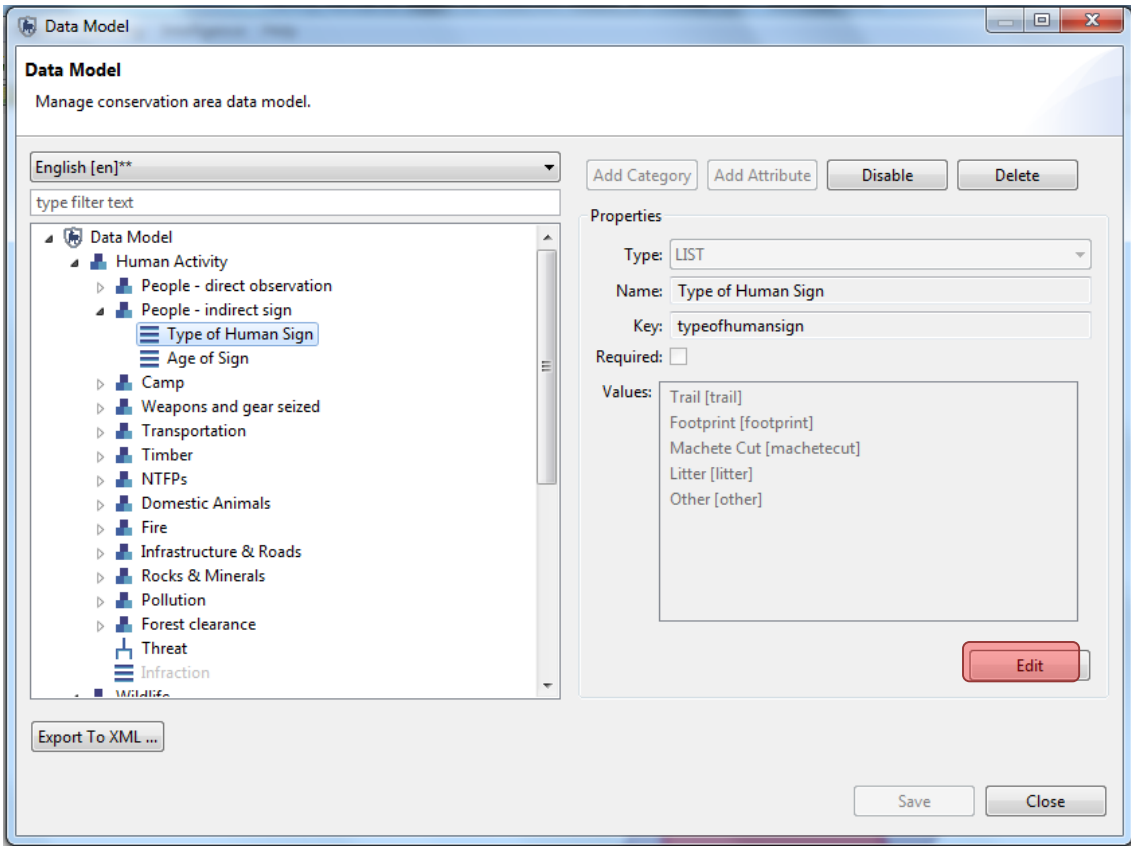
- From the list of species on the left, select the species you want to add by expanding the lists. Then click on the right arrow to add them to your data model
- Click **Ok**…**Finish**

Modifying Existing Attributes

You can modify existing attributes by adding (or disabling) values (for example if the current list of values is not relevant for your site).

You're going to modify the list of attributes under the category Human Activity – People - Indirect sign.

- Select the category: **Human Activity – People – indirect sign**
- Select the attribute – **Type of human sign**
- Click on **Edit in the right-hand lower corner of the screen**



- Click **Add**
- Enter ' **Charcoal furnace**'
- **Save**
- **Finish**
- **Save the data model** by clicking on **Save** in the lower right-hand corner of screen

Note: *When you have modified the data model you can then share it with other conservation areas in order to standardize the list of observations. Click on 'Export to xml' and save the file.*

<End of Module 7 – Data Model Management>

Module 8 – Administrative Tasks

Objective:

This Training Module will introduce you to a number of administrative functions to ensure a productive working environment in SMART. During this module, you will look at the export/importing capabilities, backing up and restoring of a conservation area, along with other best practices that will ensure a minimal amount of downtime if disaster strikes.

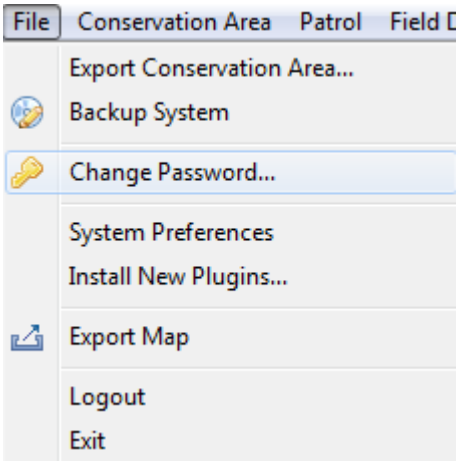
- **Changing your username and password**
- **Importing and exporting patrols**
- **Exporting and importing intelligence records**
- **Exporting and importing a Conservation Area**
- **System backup**
- **Configuring automatic backups**
- **Backing up and restoring the database**

Detailed Steps:

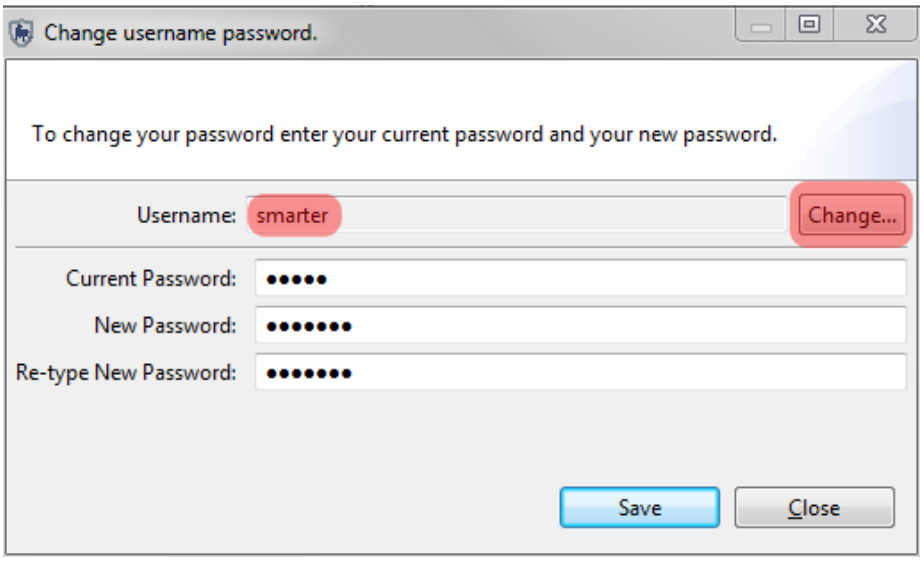
Previous modules that you have worked on have focused on one particular portion or perspective within the SMART application. This module will explore many perspectives but with a focus on creating backups and other safeguards to protect your Conservation Area(s).

Changing Username and Password

The following steps are to change the password for the account that is logged into and active.



- From the File menu select **Change Password ...**

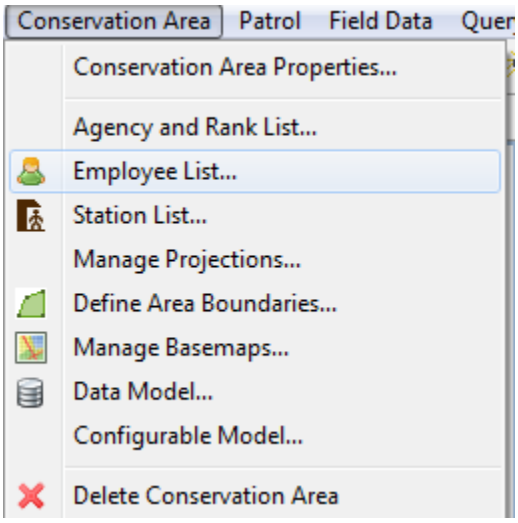


- Click **Change…**
- Type in **smarter**
- Click **OK**
- Type in
    - Current Password = **smart**
    - New Password = **smarter**
    - Re-type New Password = **smarter**
- Click **Save**
- Repeat the process and change it back to **smart**

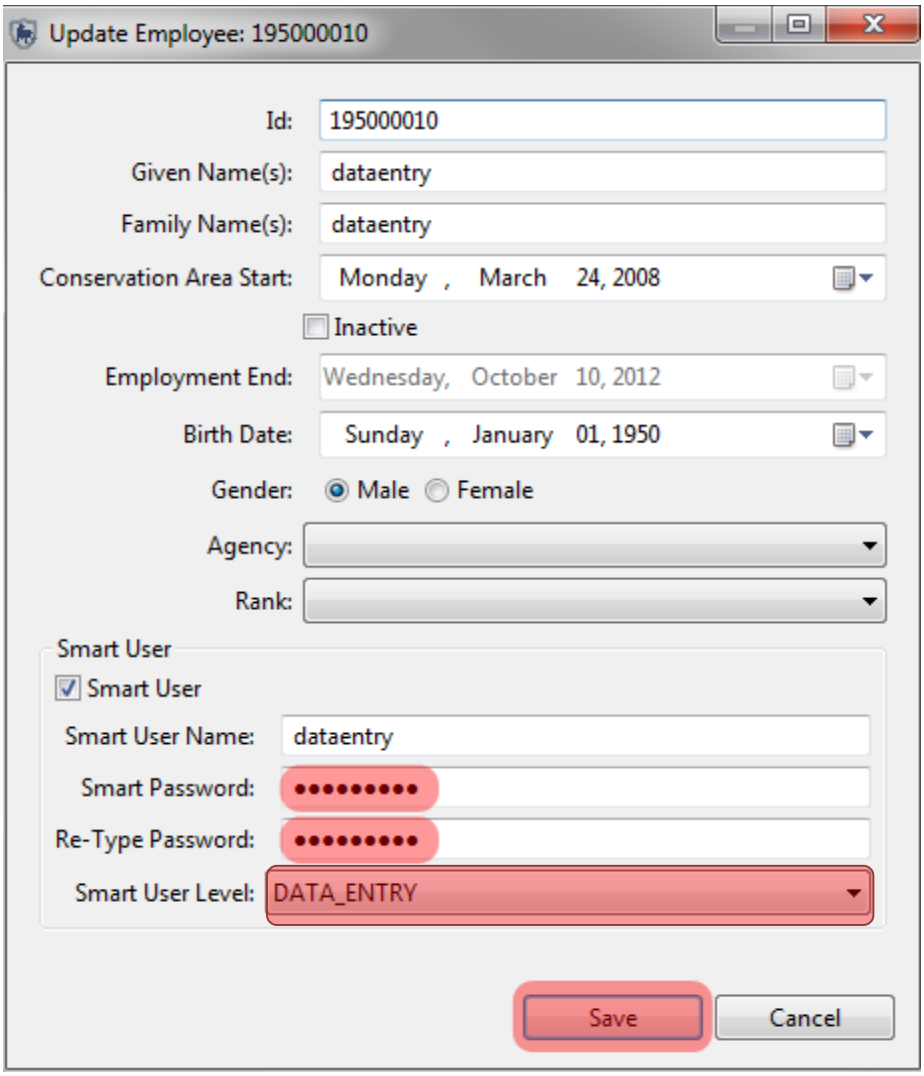
Changing Username and Password of Other Accounts

If a non-administrator account has forgotten the username or password an Administrator account can log into SMART and change the account settings for that employee.

***Note**: You must always have a least one Administrator for a Conservation Area. If you delete the main administrator but there is not another administrator in the system, you will be unable to open the database.*



- From the menu select Conservation Area - **Employee List**
- Select one of the employees
- Click edit



- Check SMART User
- Enter the SMART User name : **dataentry**
- SMART password : **dataentry**
- Under SMART User level: select **DATA_ENTRY** (see explanation for **SMART User Levels** below)
- **Save**

***Note**: The Update Employee window can be used to update all aspects of a particular employee including Agency, Rank, Smart User Level.*

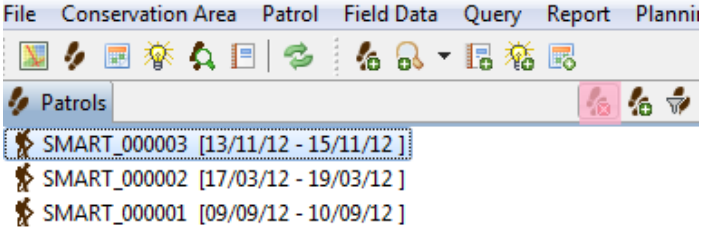
Exporting and Importing Patrols

SMART's ability to Export and Import patrols allows for multiple data entry computers and collating into a master system.

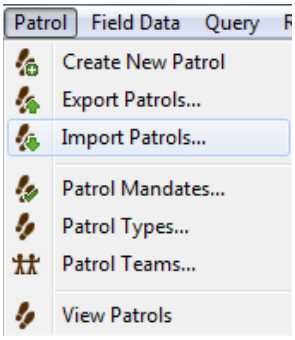
***Note**: For users familiar with MIST, Import/Export patrols in SMART corresponds to Data Replication in MIST*

- Change to the **Patrol Perspective**
- From the Patrol List View double-click the Patrol **SMART_000003** (select **all-dates** in the filter if you can't see the patrol), you need to open the patrol before you can export it.
- On the Patrol Menu select **Export Patrols**
- Browse to **Module 8** on the USB key
- Select **SMART_000003**
- Leave as default the box for '**Include Attachments'**
- Click **Export**
- **OK**
- Check in Windows Explorer that the file was correctly exported to the Module 8 folder.

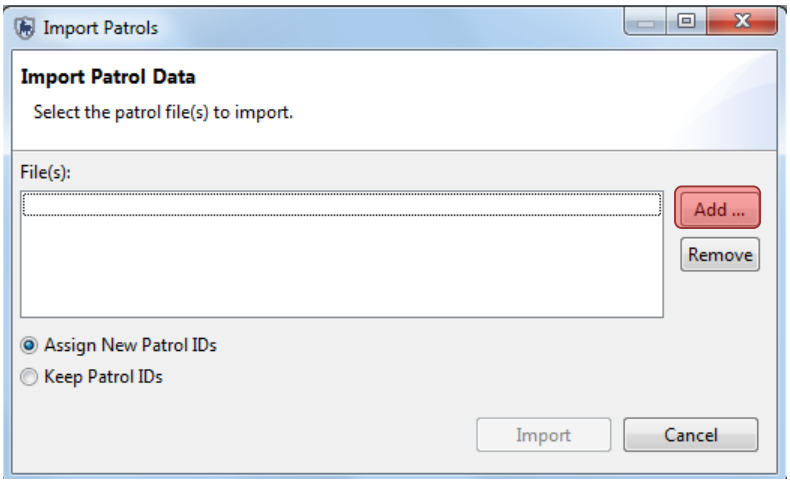
To test the import process, you will need to delete the Patrol SMART_000003 before you import it.



- Select patrol **SMART_000003**
- Click on the icon **Delete this current selected patrol**
- Click **OK**



- On the main Patrol menu select **Import Patrol**



- Click on Add
- Browse to the file **SMART_000003** that you exported to Module 8 on your USB key
- Click **Import**

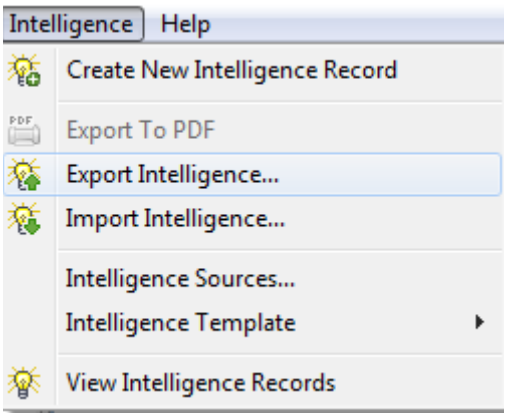
Exporting and Importing Intelligence Records

The exporting and importing of Intelligence records allows for distributed information gathering that can be combined at a later date in a central system. Since Intelligence records can be tied to Patrols it is important to understand how the export and import process works for linked patrol and intelligence records.

An exported patrol will retain links to plans and intelligence records. If the patrol is imported into a Conservation Area that already contains the plans and/or intelligence records then the links are re-established.

If the patrol is imported into a Conservation Area that does not contain the plans or intelligence records then the link will remain broken until the plans and/or intelligence records are imported.

If an Intelligence record with links to a patrol is imported and the linked patrol already exists the link is re-established.
If an imported intelligence record has a link to a patrol that does not exist the type of patrol is still set to "Patrol" and the link to a patrol has to be set automatically.

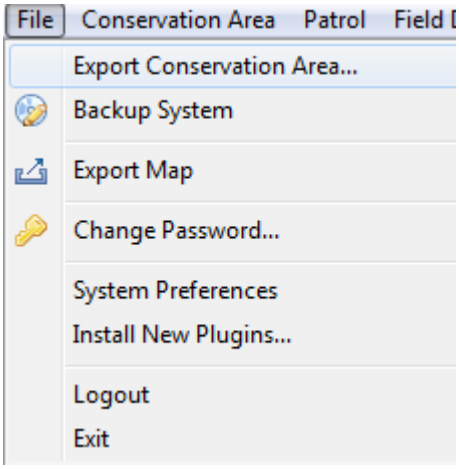


- In the Intelligence Perspective select an **Intelligence Record**
- From the intelligence menu select **Export Intelligence**
- Browse to the folder **Module 8**
- Check the **box** next to the Intelligence record
- Check **Include Attachments** if necessary
- Click **Export**

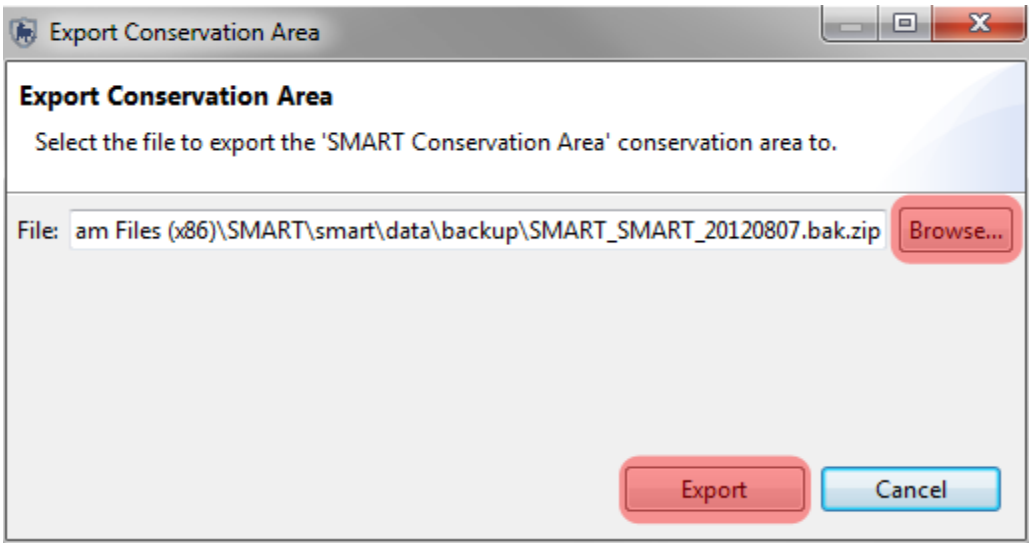
Importing an Intelligence record involves selecting a record or records and completing the import process. If an Intelligence record with the same name already exists Smart will warn the user about potential duplicate entries.

Exporting a Conservation Area

The exporting of a Conservation Area will export all of the components of a particular Conservation Area. This function not only allows for the archiving of a Conservation Area, but also for distribution and sharing.



- From the File menu select **Export Conservation Area**



- Click **Browse...**
- Browse to the folder **Module 8**
- Keep the default file name
- Click **Save**
- Click **Export**

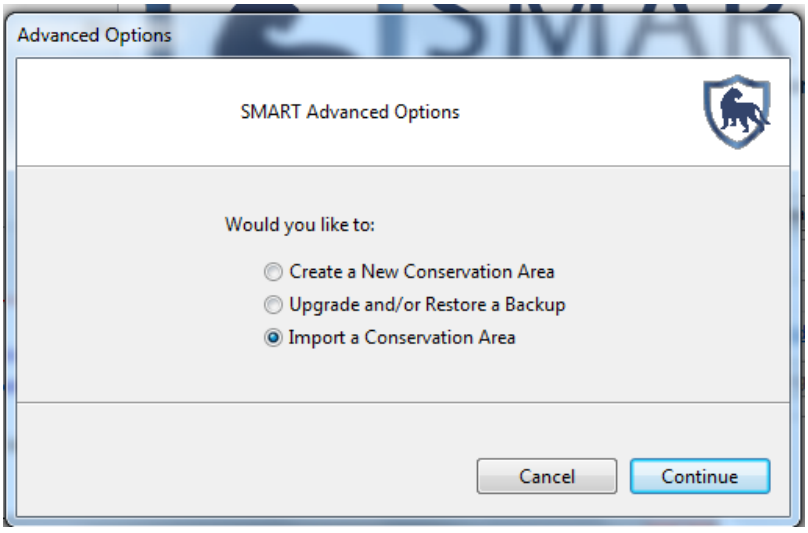
Importing a Conservation Area

Now you're going to import a new Conservation Area into your database. SMART can manage multiple conservation areas in a single database, but you can only log in to one at a time.

- First, **logout** of your current Conservation Area
- In the main menu, select **File - Logout**

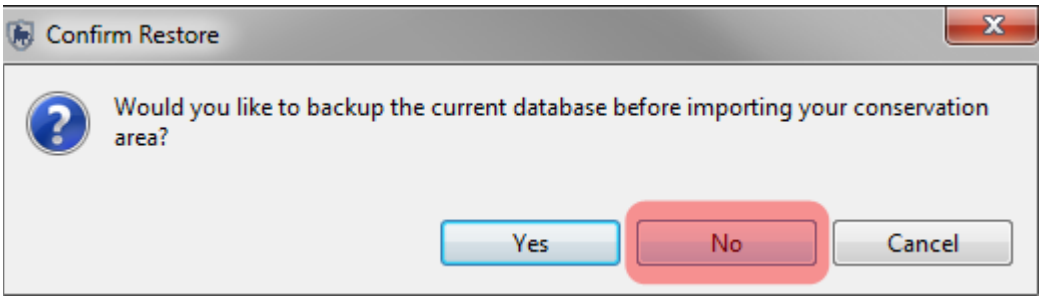
SMART will now restart automatically and bring you to the main login screen

- Click **Advanced**

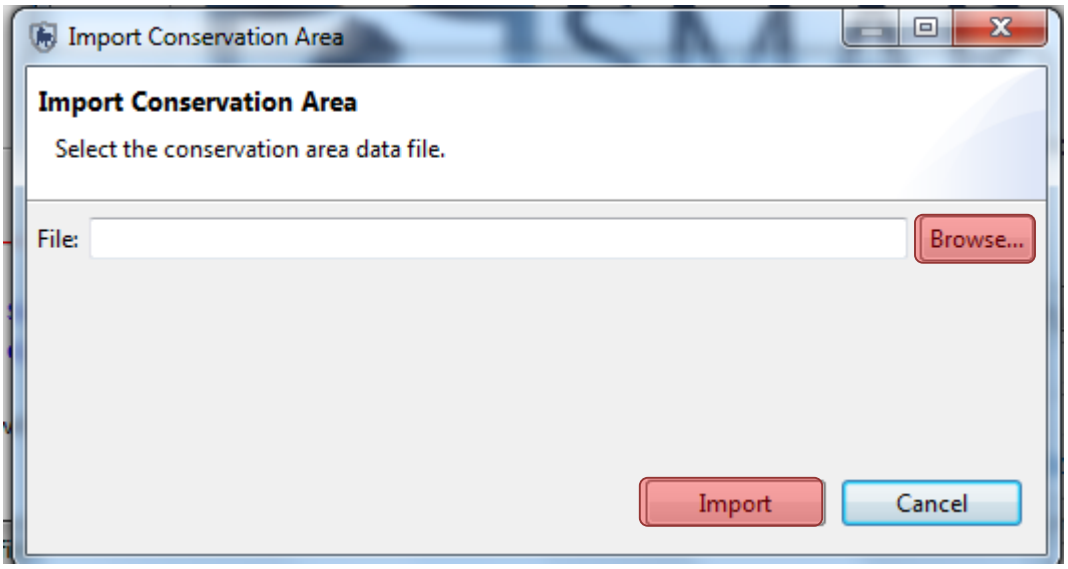


- Select **Import a Conservation Area**
- **Continue**

SMART will ask you if you want to backup the current database:



- Click **No**



- Browse to **Module 8**
- Select the file **SMART_Training.bak.zip**
- Click **Import**
- When the import is complete, click **OK**

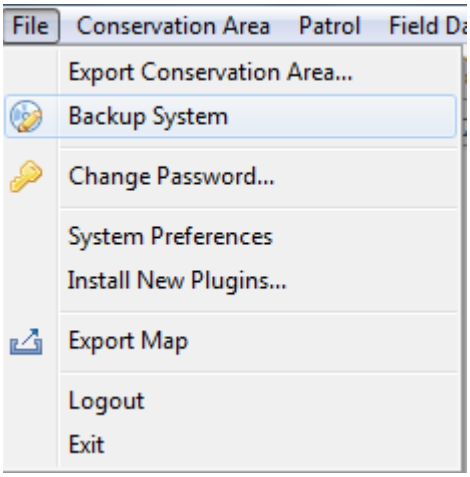
You'll now see a new conservation area listed in the login screen

- Select the new **SMART** Conservation Area
- Enter
  - Username = **smart**
  - Password = **smart**
- **Login**

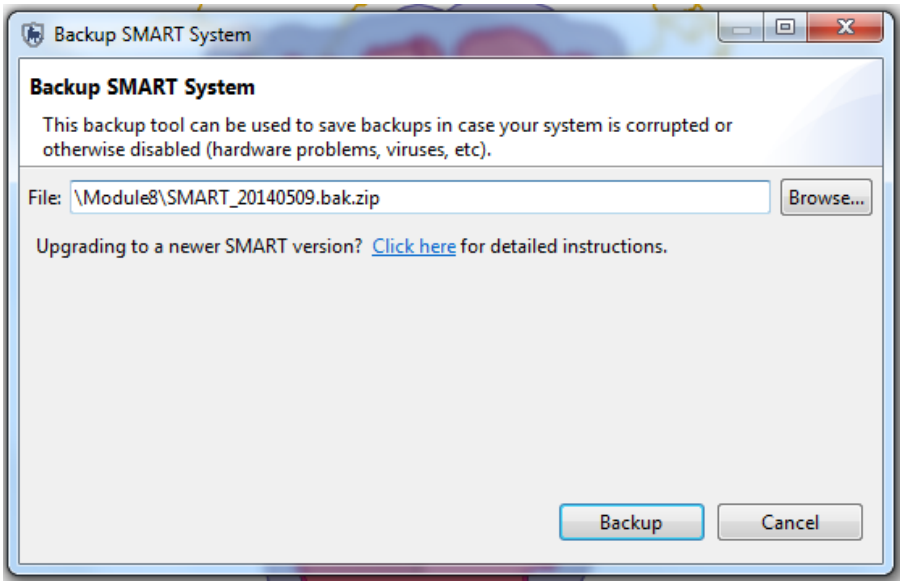
Backup System

In the previous example you exported and then imported a single Conservation Area. The Backup System function will create a backup file of the entire database and backup every Conservation Area managed by that database.

***Note**: if you have multiple conservation areas in the database, this will back-up everything in one step*



- In the File menu select **Backup System**



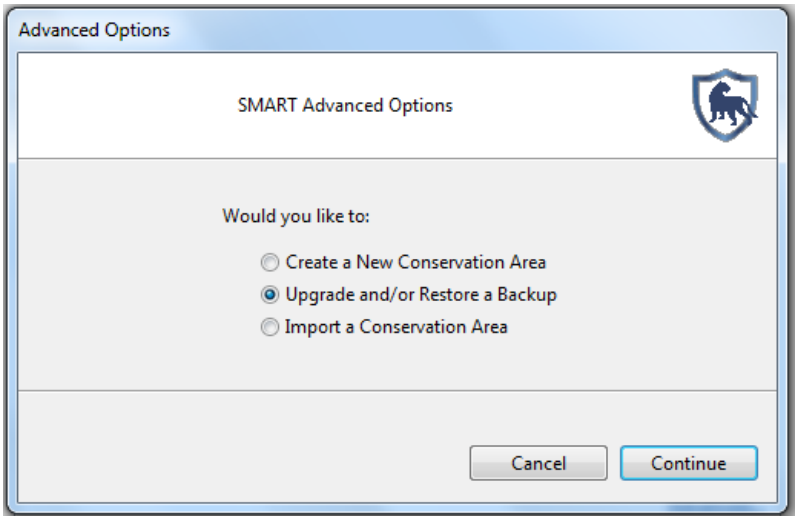
- Browse to the folder **Module 8**
- Keep the default file name
- Click **Backup**
- Once the process has completed click **OK**

- Browse to the folder **Module 8** to ensure that the file has exported correctly

***Note**: the filename is nearly the same as the Conservation Area export file with the exception that no specific Conservation Area names are included in the export filename.*

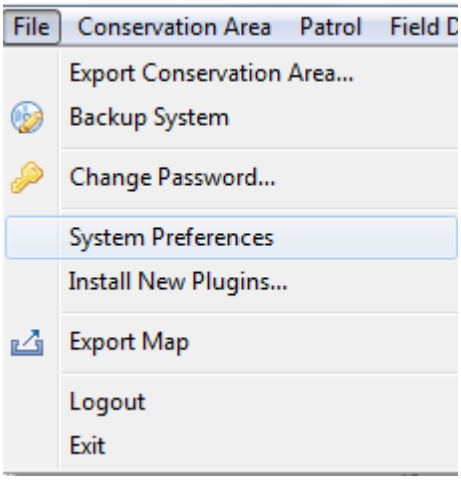
At this point you will not need to restore the entire database, but the following screenshot is a reminder of where the import would take place.

***Note**: the backup file can be imported through the SMART Advanced Options screen.*



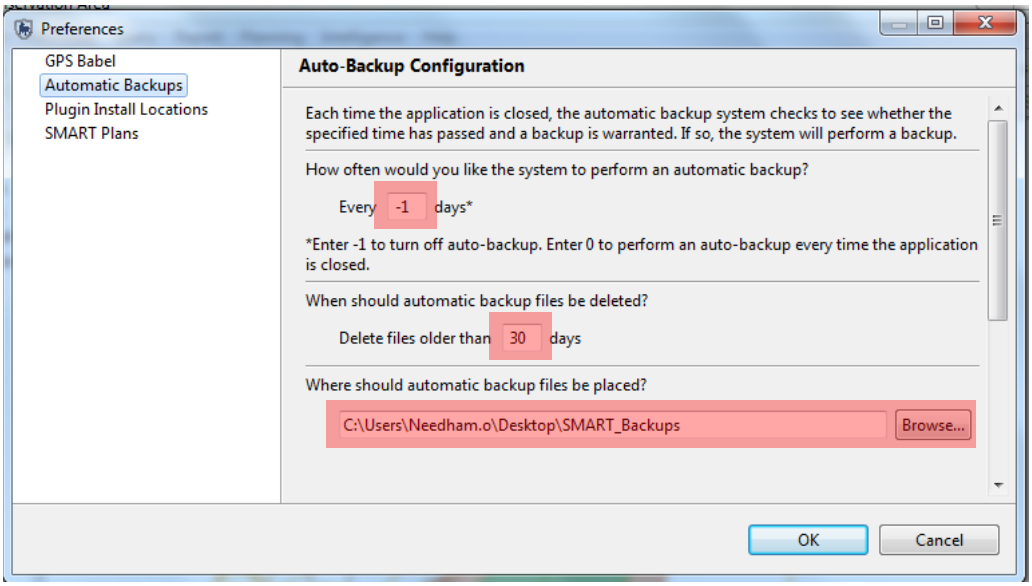
Configuring Automatic Backups

Remembering to perform regular backups is critical to ensuring that data can be recovered in the event of a system crash. SMART has the ability to automatically perform regular backups to a specified folder.



- In the File menu select **System Preferences … Automatic Backups**

***Note**: The frequency (and file location) for the Auto-Backup Configuration will be left up to the individual administrators.*



- Set the backup for **every 2** days
- Leave the default delete threshold and backup location
- **Close the Application**.

You should notice a short backup process that occurs before the application finally closes, this process may take much longer for large databases with many patrols, Basemaps and attachments.

- **Log back in** and change the autoback-up configuration back to **-1** to disable auto-backups

Delete a Conservation Area

- You can delete an entire Conservation Area by selecting **Conservation Area – Delete Conservation Area** from the main menu.

Warning – you should always do an export or backup before doing this to avoid losing your data!

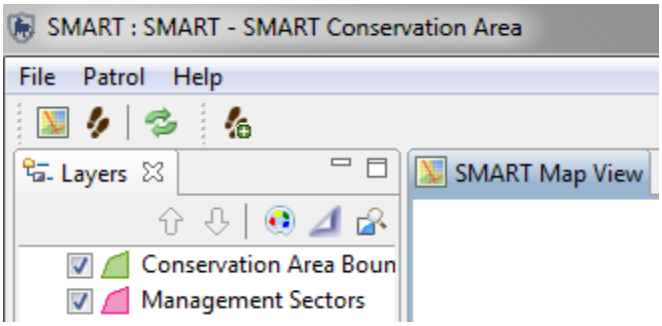
User Levels Permissions and Restrictions

Throughout the technical training modules all examples have been performed through the Administrator account, which has full access to all SMART functions. Other SMART accounts have different access permissions allowing Administrators to assign an appropriate user level to employees.

Data Entry

The data entry user level has the most restrictions in place. The menu bar and icons available have been customized to include only the features required for the account to enter patrol data.

The data entry user level can enter create, export, import patrols, and create system backups after patrol information has been completed.



Analyst

The analyst user level is designed for employees to create, export, import, run queries and reports. The analyst user level cannot create, alter or delete any queries or reports that have been saved in the Conservation Area Queries (or) Reports. This user level can run, create, alter or delete reports saved in the My Queries or My Reports folders. An analyst account cannot enter patrol data or export/import patrols.

Manager

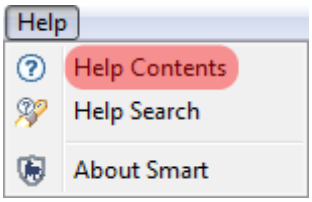
The manager account can make full changes to the patrol, query, report or planning modules. A manager account cannot make changes to the data model, update Conservation Area or patrol parameters.

Administrator

The administrator account has full access to all functions and options in SMART.

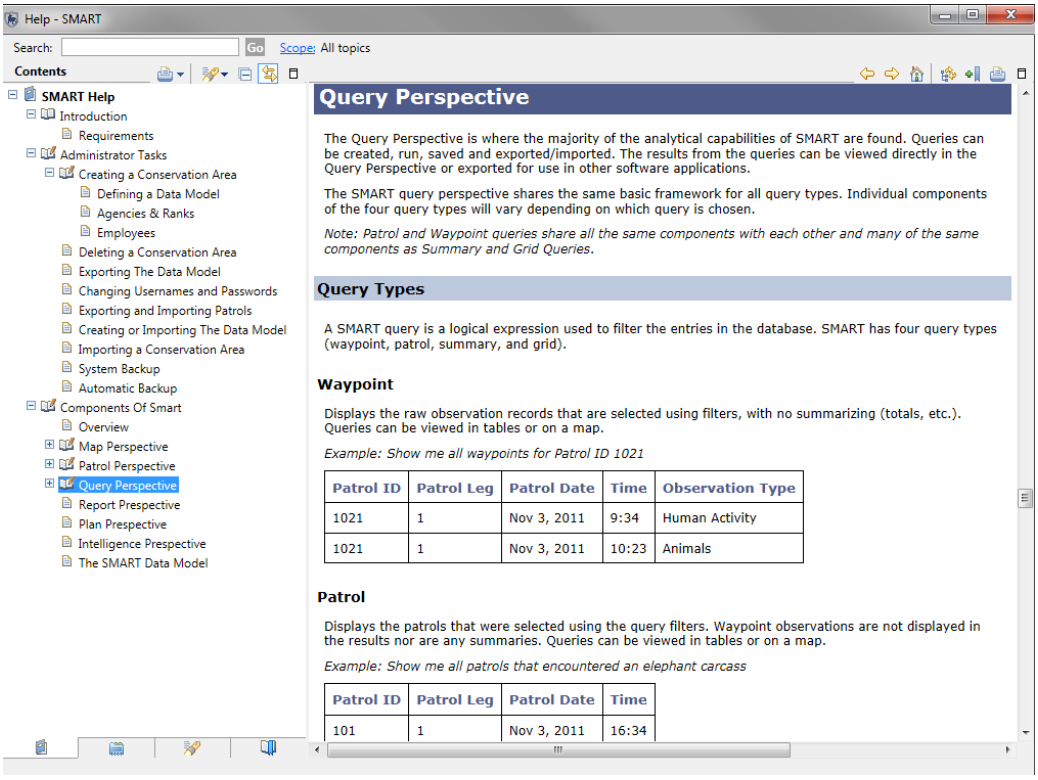
SMART Help

SMART's help system can be accessed directly through the menu bar.



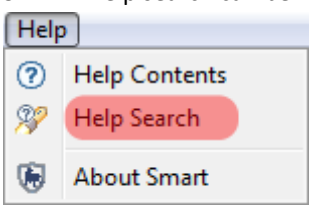
- To access the Help Contents from the menu select **Help Contents**

Contents of SMART can be accessed through the Help tree or by directly entering in key words into the Search bar.



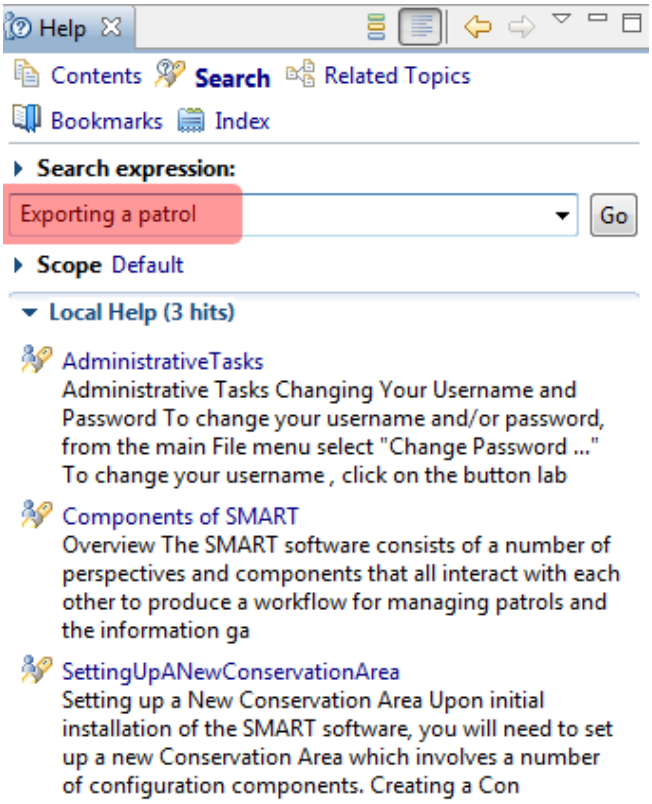
SMART Help Search

SMART Help search can be viewed through a side window to allow for regular viewing of the application.



- To access the Help Contents from the menu select **Help Search**

In the window on the left the Help Search functions are available. Direct keyword searching is entered in the Search expression: field. Browsing of the help tree is available through the Contents link.



<End of Module 8 – Administrative Tasks>

Module 9 – CyberTracker Plug-In

Objective:

This Training Module will provide instruction on how to install and use CyberTracker to collect field observations during a patrol.

- **Installing CyberTracker on a desktop computer**
- **Creating Custom Data Models**
- **Installing CyberTracker on a PDA (Windows and Android)**
- **Installing SMART-CyberTracker plug-in**
- **Transferring Data Model to the PDA**
- **Collecting data using the PDA**
- **Exporting patrol information into SMART**

Detailed Steps:

SMART-CyberTracker is an optional plug-in that eliminates the requirements that observations are recorded separately from the GPS data. CyberTracker uses a GPS enabled PDA to collect the GPS data and the observation data in a single unit. After a patrol returns to the office the GPS and observation data is transferred to SMART in a semi-automated process.

Installing CyberTracker on the Desktop Computer

CyberTracker is a third party platform that was created to simplify the collection of field data. The SMART-CT plug-in leverages the functionality of CyberTracker but still requires the base CyberTracker software be installed on the same computer that runs the SMART software.

The CyberTracker plugin should be installed in the SMART application by default. You can confirm this, by checking your top menu structure, selecting "Field Data" and then seeing if you have a "CyberTracker" option in the dropdown. If you do not have it installed or are experiencing issues, follow these steps:

- Select **File**
- Select **Install New plugins**
- You will then get the correct version of CyberTracker from your local file system
- If you are still experiencing issues, visit this link for more detailed instructions: https://www.assembla.com/wiki/show/smart-cs/Application_Installation#plug-in_installation_-_version_3.0_and_newer

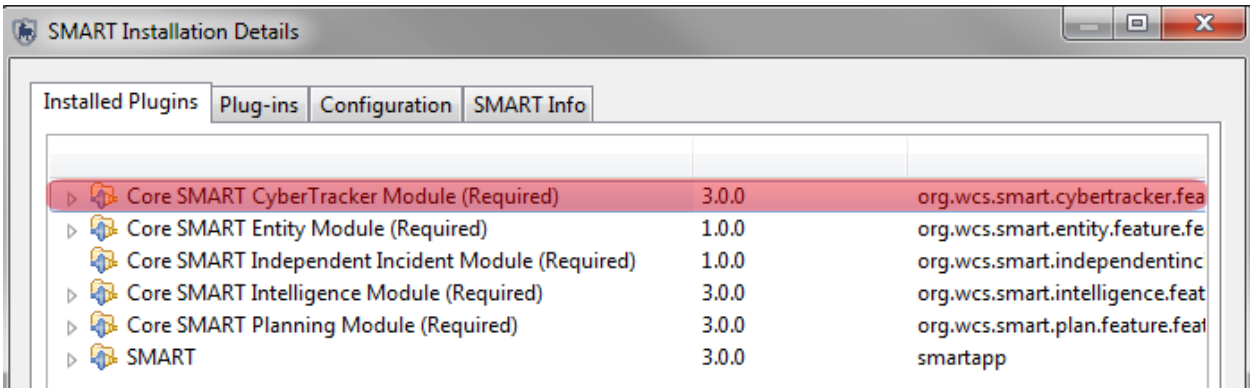
Installing the CyberTracker plug-in in SMART

CyberTracker is an additional plug-in that requires the user to install the new package to allow for the use of CyberTracker within SMART.

Note: CyberTracker plug-in is most likely already installed in your version of the software but these steps will help familiarize you with the plug-in installation process.

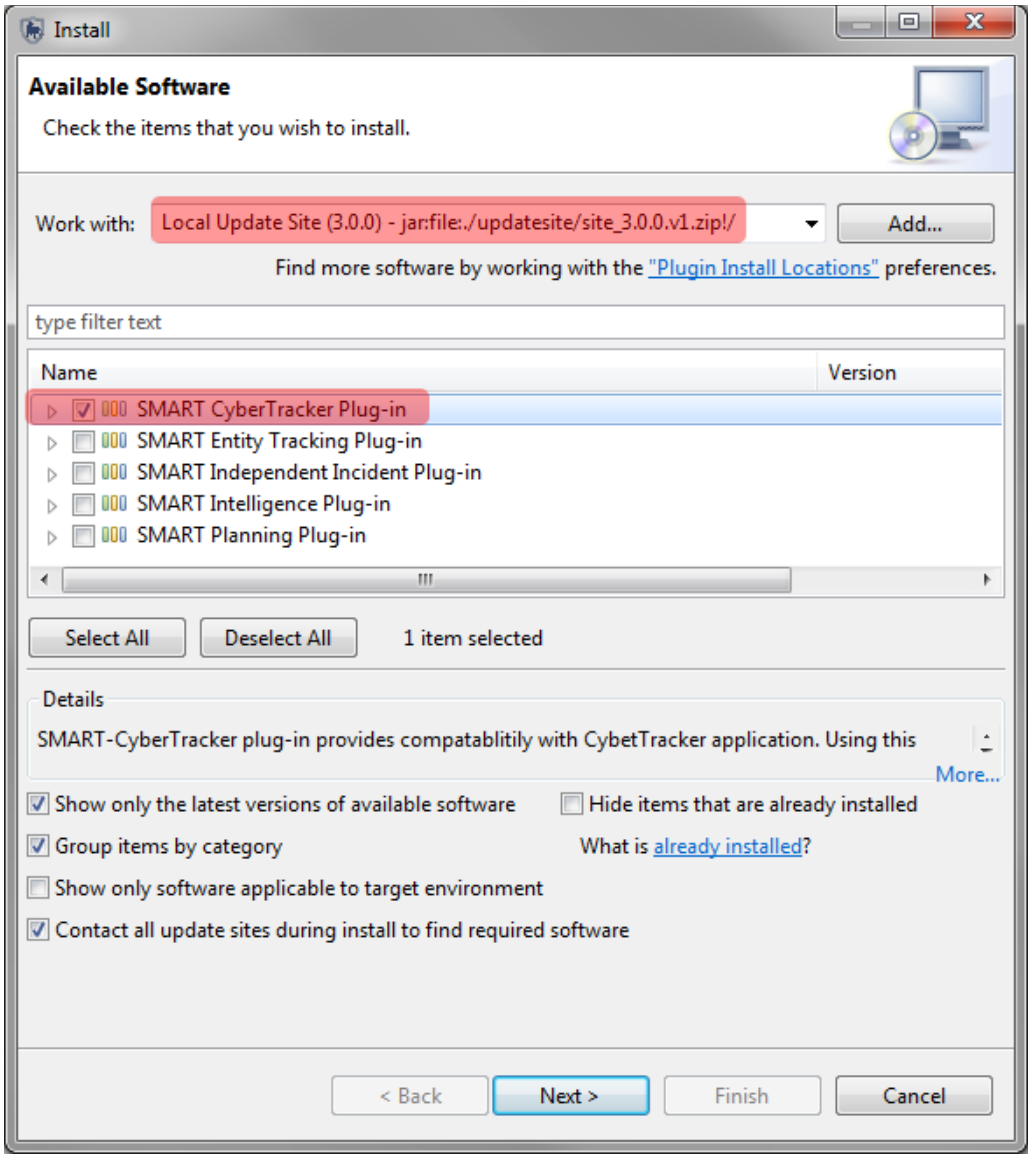
If you are unsure if your installation of SMART has the Independent Incident plug-in installed you will need to:

- Open the **Help - About SMART - Installation Details - Installed Plugins** tab



If you already have CyberTracker plug-in installed on your computer then skip the following step.

- From the menu select **File - Install New Plugins**



- Select the **Local Update Site**
- Check **SMART CyberTracker Plug-in**
- Click **Next**
- Complete the install process for the Plug-in and **restart** SMART

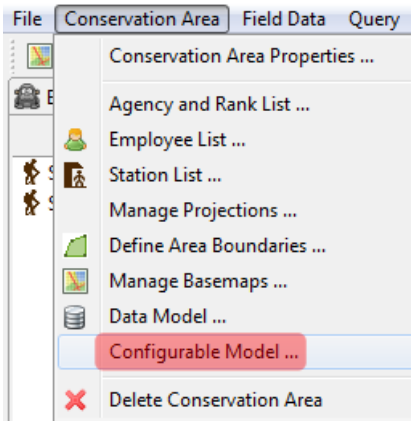
Note: After the installation SMART will requires a restart and for users to log back into the Conservation Area.

Creating Custom Data Models

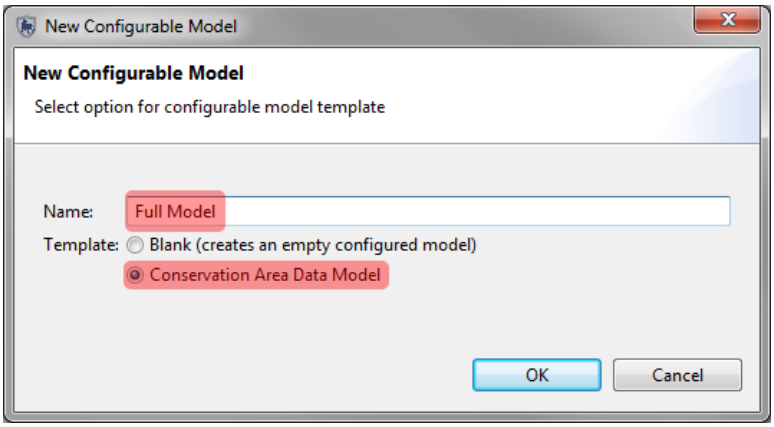
The current data model is designed for data analysis flexibility and not field user data entry efficiency. For example, the default data model has a variety of higher level categories (Animals, Features, People) that the field data entry users don't necessarily want to select each time they make an observation. In order to improve data entry efficiency this document provides a collection of options to allows users to configure data entry aiming to make it more efficient.

The options below are critical for the success of the SMART CyberTracker integration as they will allow the SMART data model to be quickly and easily deployed with CyberTracker in a way that leverages the richness and ease of use CyberTracker users already expect.

An initial install of CyberTracker on a PDA requires an accompanying data model. Instead of using a pre-configured data model for the install you will create one in this module that will be part of the initial installation.

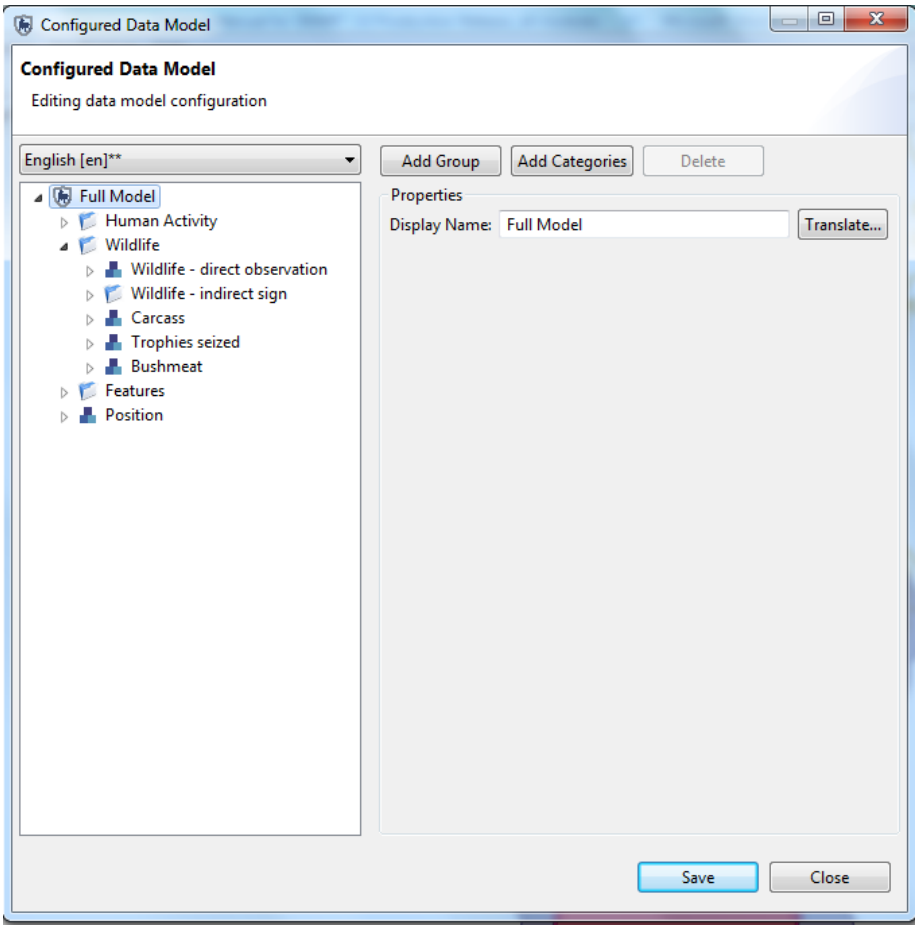


- In the menu select **Conservation Area - Configurable Model**
- After the window appears click **Create New**



- Type in **Full Model** for the name and select **Conservation Area Data Model**

This will create a CyberTracker data model based on the existing Conservation Area Data Model. From here you will examine the model and later create a simplified model from the beginning.



The structure of a Configured Data Model is broken up into three components. Groups, Categories and Attributes which is slightly different than the standard SMART data model which has only Categories and Attributes.
The Group category is required when multiple ties of categories are required. The layout remains the same but requires users to use Groups on data model branches with multiple categories.

Editing a Configurable Data Model

Edits to the Configurable Data Model does not affect the Conservation Area's data model. The custom edits will only be reflected when using CyberTracker to collect observations.

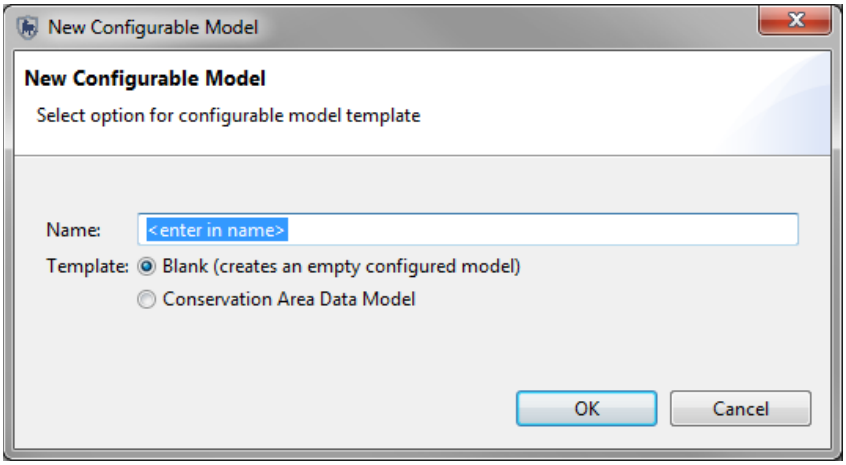
Add Group - a group can be added at any level to provide the equivalent to a sub-category.
Add Category - this will add only the selected category and its direct attributes. Any sub-categories below the selected category will be ignored.
Delete - deletion will affect sub-groups and categories and any objects below them.
Translate - opens a dialog box to allow for entering / editing of translations of the selected item.

- **Save** and **Close** the Full Model

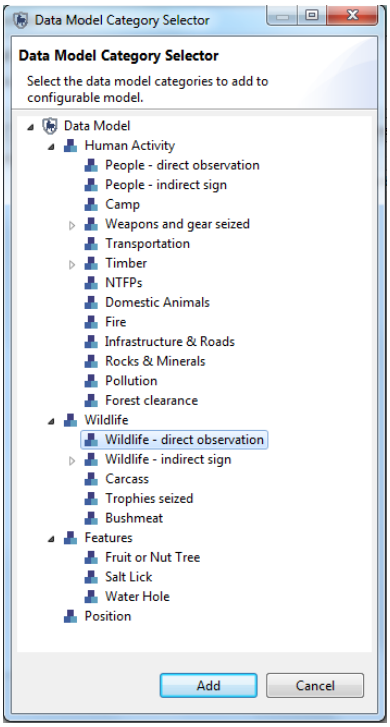
Creating a Configurable Data Model

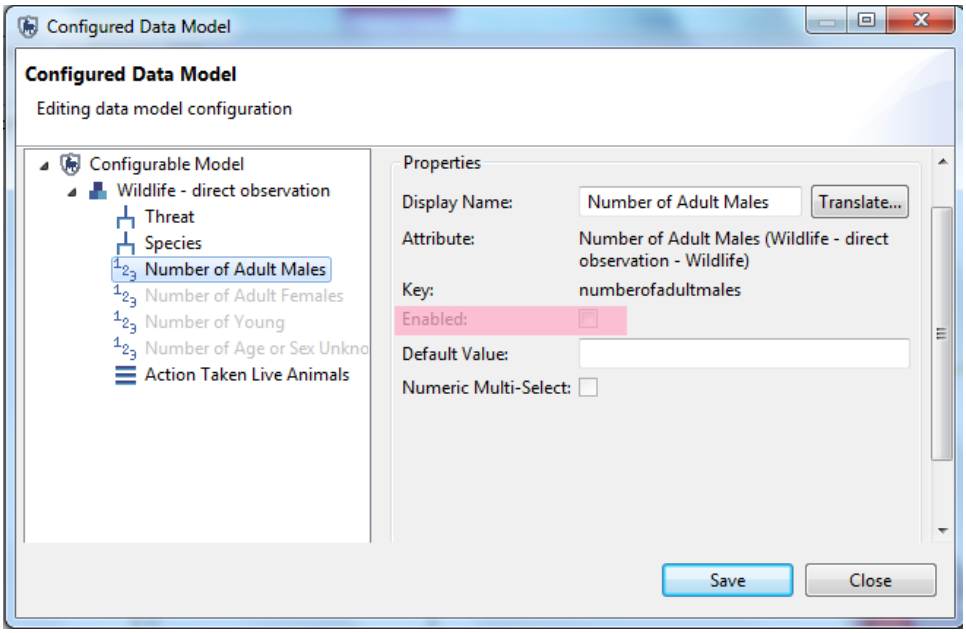
In this module you will perform all edits on a blank configurable data model. All aspects of the edits will be covered building a new configurable data model.

- Select **Create New** and provide a **name** for the data model
- Select **Blank (creates an empty configured model)**
- Click **OK**

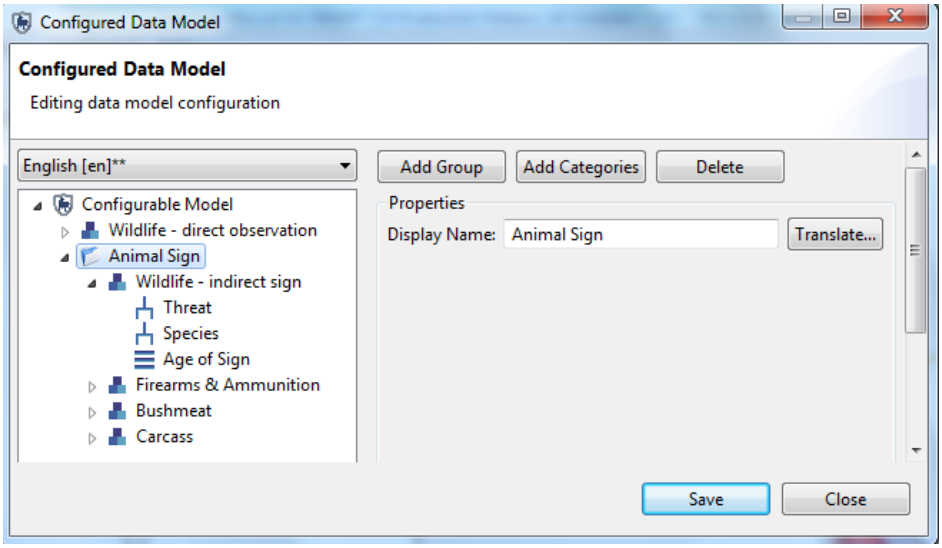


- Click on the name of the new data model click **Add Categories** to make the Data Model Category Selector appear.





- Select **Wildlife – direct observation** and then click **Add**
- All attributes under this category will appear. Disenable all attributes except **Threat, Species, Infraction and Action Taken Live Animals** by unselecting the Enabled tick box.
- Select the category **Wildlife – direct observation** and click **Can have photo:**



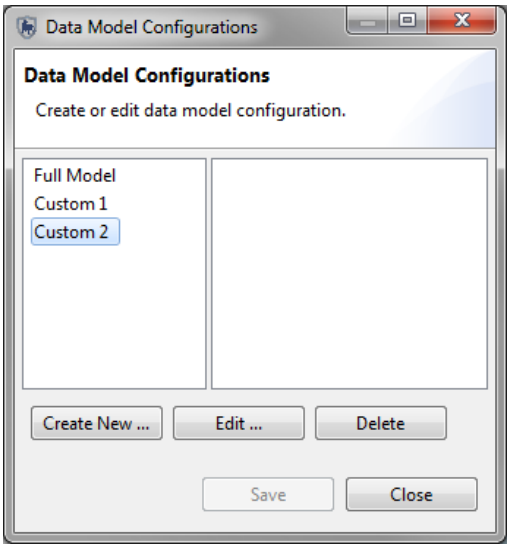
- Create a Group with the name **Animal Sign**
- Select **Add Categories** and then add in all the sub-categories of **Wildlife – indirect sign**
- **Add the categories of Firearms & Ammunition, Carcass and Bushmeat**
- Select **Can have photo** for all categories
- Click **Save** and **Close**

Optional Configurable Data Model Edits

Convert to list - takes tree attribute and create a single level (flattened) list rather than the original tree format.
Default Value - assigns a default value to the attribute.
Multi-select - allows for multiple items to be selected in a single screen when collecting data with CyberTracker.

Groups, categories and attributes can be dragged to new positions allowing for custom ordering when collecting data.

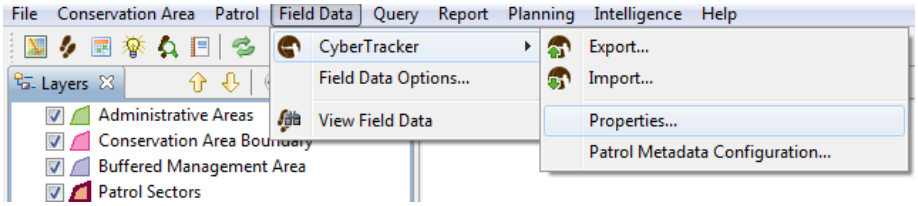
- Take an attribute and move it up or down in the list of attributes
- Select **Cause of Death** tree attribute (listed under Carcass) and **convert to list** (i.e. flatten)
- Move **Action Taken Live Animals** (listed under Wildlife - direct observation) to the top of the list and click the checkbox of **Multi-Select (Multi)**
- Click **Save**

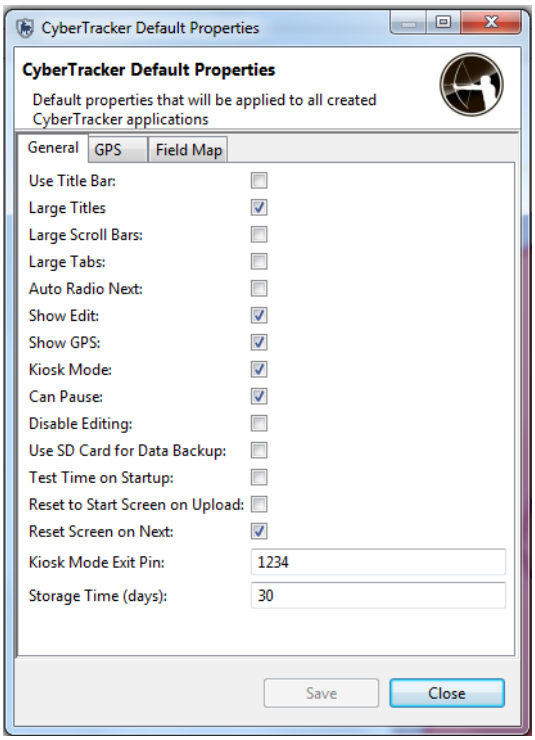


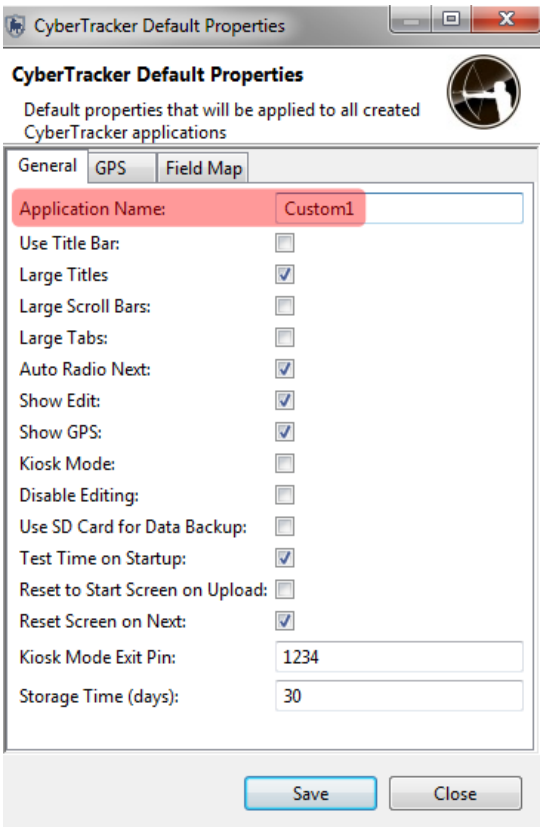
- Now create a new configurable data model using a variety of elements learned in the previous example
- After creating your final configurable data model **Save** and close down the **Data Model Configuration** window

Configuring CyberTracker Export

Before the configured data model can be exported to the CyberTracker PDA the properties of this transfer should be set.





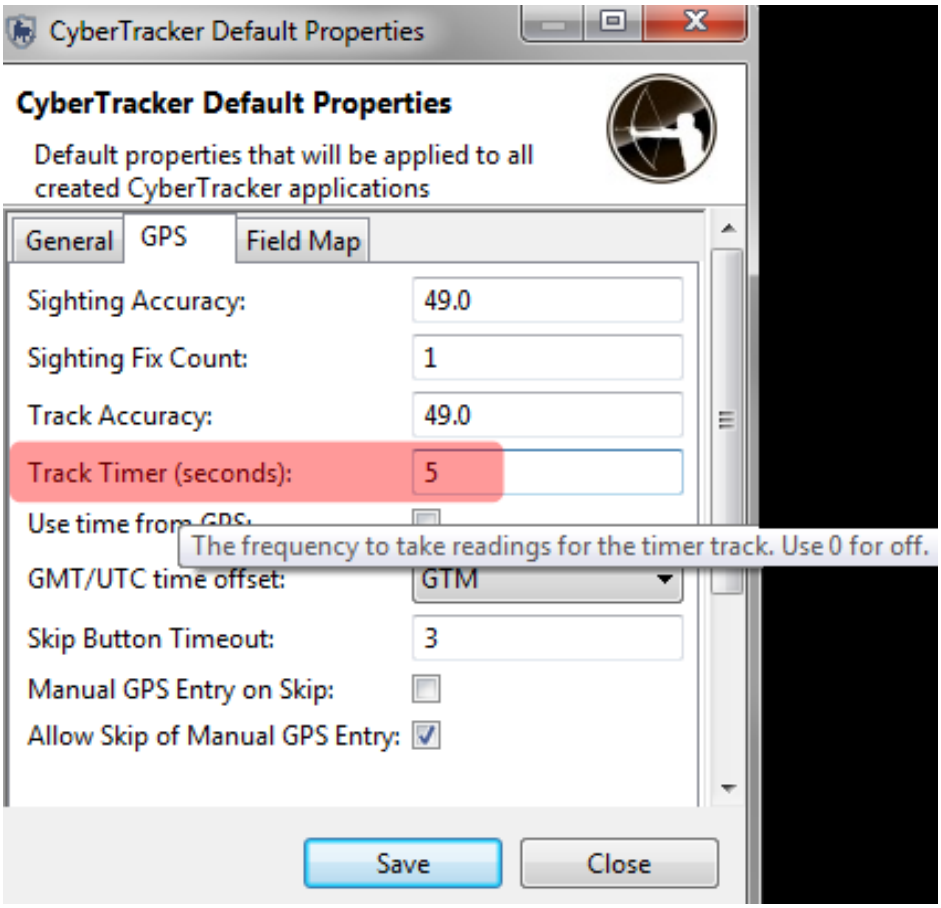


- From the menu select **Field Data - CyberTracker - Properties**

On the initial tab *(General)* of the CyberTracker Default Properties there are a number of settings that an Administrator can use to modify the behavior of CyberTracker.

-
- **Kiosk Mode Exit Pin: 1234** - the code that will allow users to exit out of the CyberTracker application on the PDA

Note: *the remaining options and their function/usage can be read in detail in the CyberTracker documentation.*



- On the **GPS** tab set **the Track Timer (seconds) to 5**

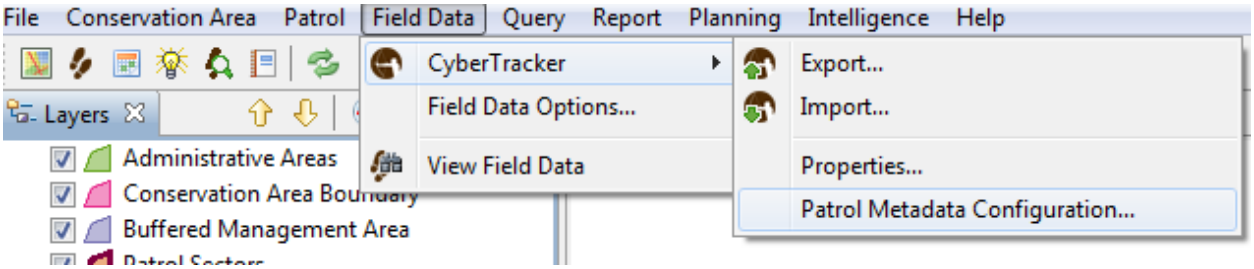
Note: *If TrackTimer is set to 0 the CyberTracker PDA will not collect GPS track information.*

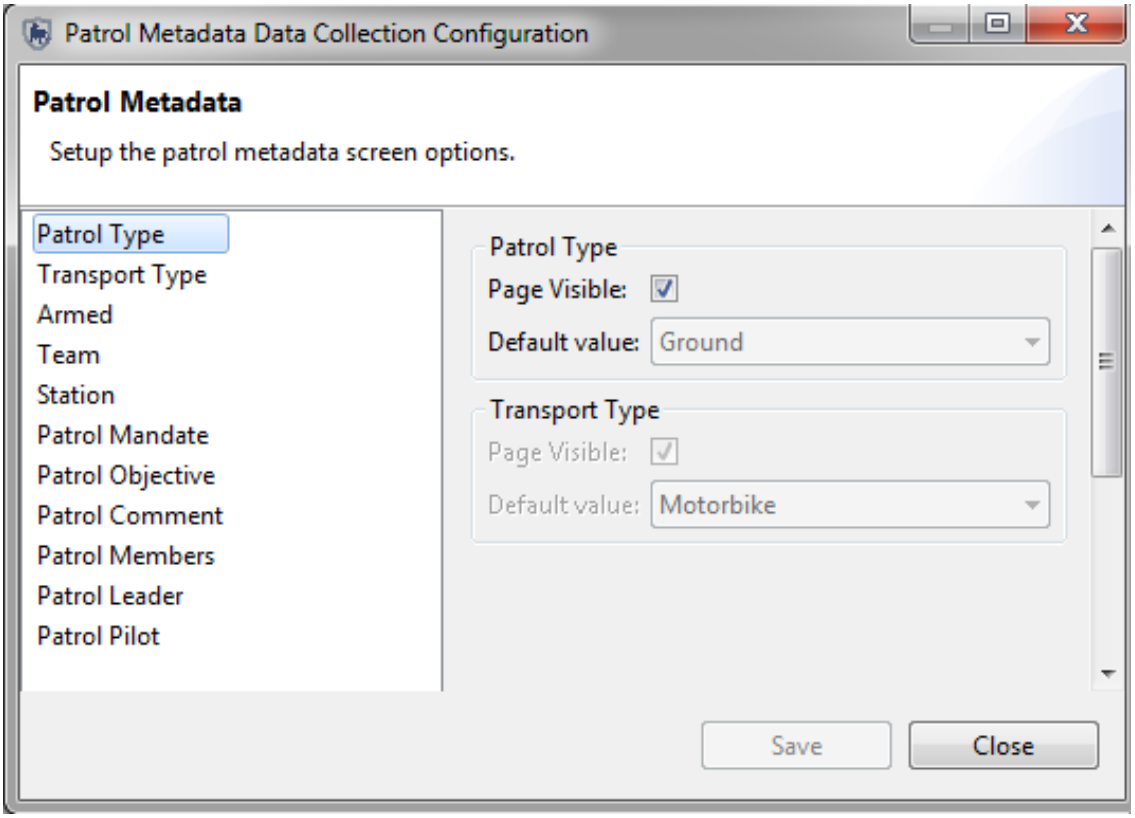
The final tab of Field Map allows for an upload of a custom map background to the PDA.

- After the **Track Timer** has been set click **Save and Close**

Configuring Patrol Metadata Data Collection Configuration

One final (but optional) configuration is the Patrol Metadata Configuration. This configuration screen allows for certain aspects of the Patrol configuration (teams, stations, transport, etc...) to be made visible or hidden with pre-selected default values.





If the patrol object is kept visible the user will be required to enter in the values that exist in the Conservation Area. If an object is not visible you will be able to select a default value that will be populated during the transfer of the CyberTracker patrol from the PDA to the main computer with SMART installed.

For this example you will not change the default values and proceed with configuring patrols using the PDA.

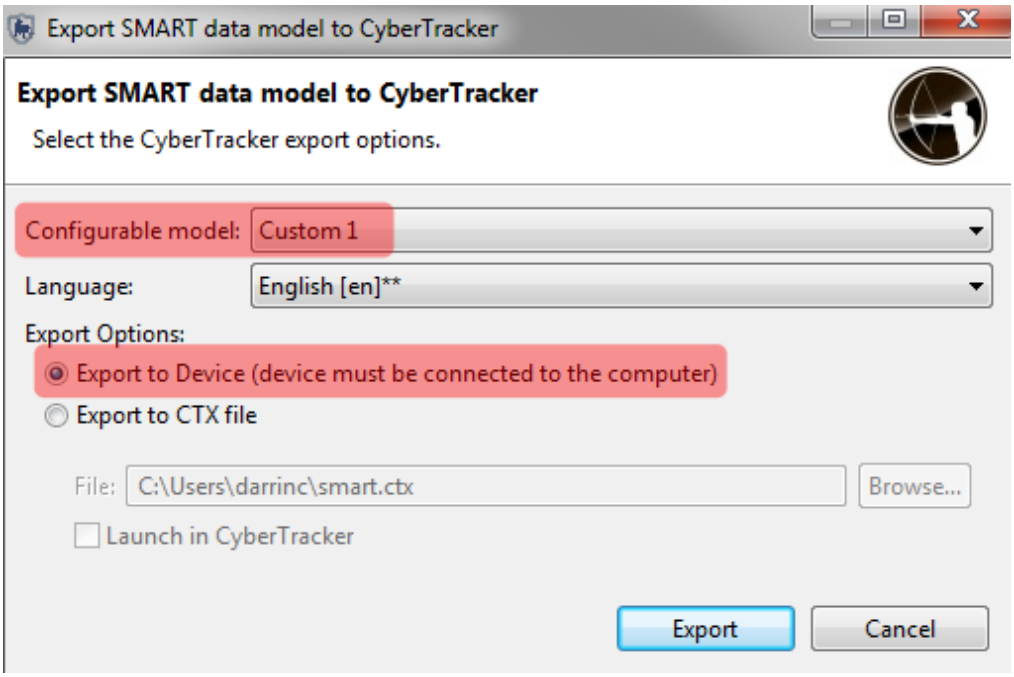
Exporting & Installation of CyberTracker on a PDA

CyberTracker data collection is done using a Personal Data Assistant (PDA) device. All devices must have CyberTracker installed before any data collection can take place. CyberTracker is supported on Windows Mobile and Android devices. Apple devices are not supported at this time.
The upload and installation of CyberTracker can occur in the main application or through the SMART interface. In this module we will use the SMART interface to complete the upload.

The process of installing CyberTracker on Windows Mobile is different than installing on an Android device. This tutorial will guide you through both platforms. The initial steps of exporting your configurable data model to CyberTracker will be the same for both platforms. What differs is how to complete the final installation of CyberTracker on the device.

Windows Mobile

Installing CyberTracker on a Windows Mobile device requires that Windows Mobile Device Center be installed on the computer. After the base application of CyberTracker is installed on the main computer then CyberTracker can be uploaded to the Windows Mobile device.



- Select **CyberTracker – Export** from the toolbar
- Select **your configured data model** from the drop down list and then select **Export to Device**
- Click **Export**
- In **the CyberTracker Default Properties - General** tab change **Application Name** to match your second configured data model.
- Complete the export for the **second configured data model** to the PDA
- Repeat for **the Full Data model**

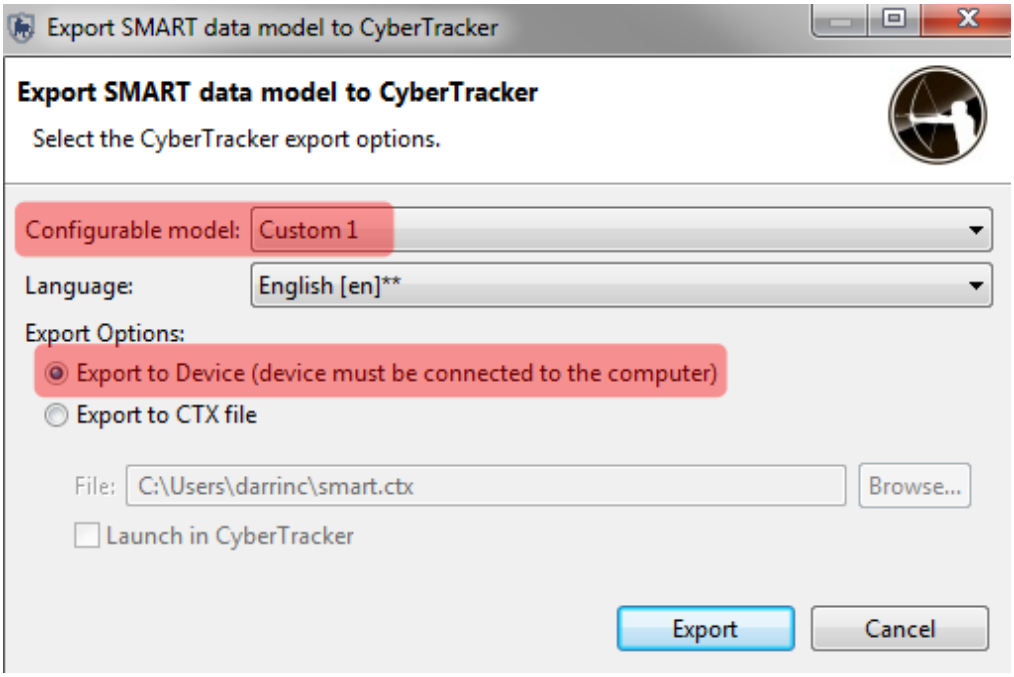
After Export has been selected Windows Mobile Manager will automatically install the CyberTracker application on the Windows Mobile device.

Note: after a successful install you will be able to see the name you created in the CyberTracker - Application Screen.

Installing on Android

The initial process of selecting your configurable data model and exporting directly to the device is the same for Android devices. What varies will be the process to finalize the install of CyberTracker on the Android device.

The transfer process will create a CyberTracker install file on the device. Where it is located will vary depending on the device and its configuration. To complete the process users are required to find the install file and manually complete the installation of CyberTracker. Once that is complete the application and the exported configured data model will be available for use.



- Select **CyberTracker – Export** from the toolbar
- Select your **configured data model** from the drop down list and then select **Export to Device**
- Click **Export**
- In **the CyberTracker Default Properties - General** tab change **Application Name** to match your second configured data model.
- Complete the export for the **second configured data model** to the PDA
- Repeat for the **Full Data model**

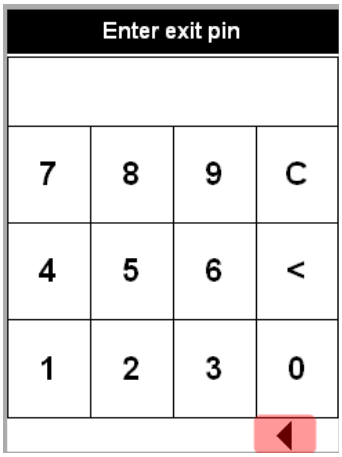
Note: If the name of the application is not changed in the CyberTracker Properties - General tab the export process will overwrite any previous upload with the current one. If your intentions are to load a new configurable data model then make sure that it has a unique name.

Collecting Data on the PDA

At this point you should have two configured data models loaded onto your PDA.

To begin the process of collecting data:

- turn on the GPS
- start the CyberTracker application
- choose the data model that was first transferred to the PDA



If CyberTracker starts with the screen **Enter exit pin**

- Click the **back arrow**
- Enter in **exit pin** (default was 1234)

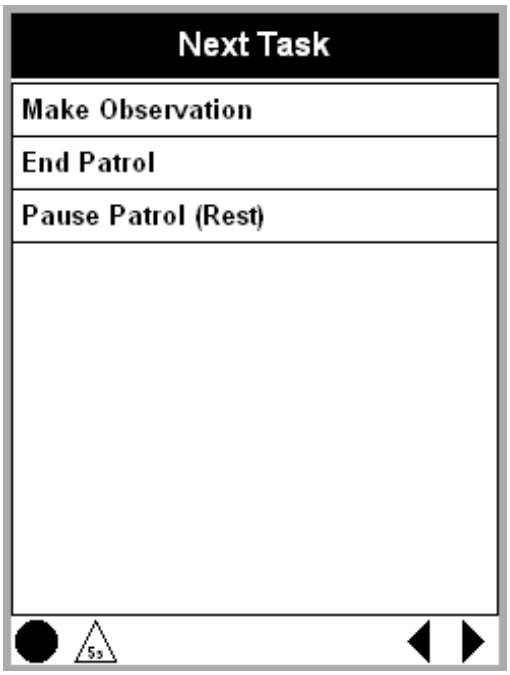
To begin a CyberTracker patrol you will need to see this screen.

- Click **Start New Patrol**
- Complete the Patrol Configuration screens to define the Patrol characteristics

Note: using the forward arrow you can skip options sections.

Making Observations

After the patrol configuration options are entered you are now able to collect data using your CyberTracker PDA.



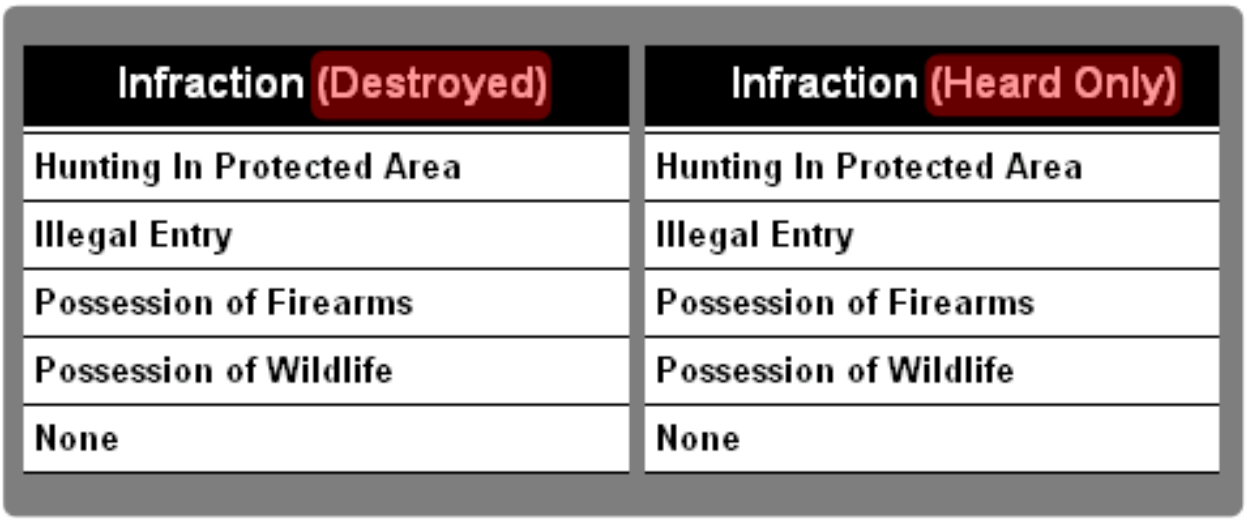
Make Observation	Loads the configured data model and allows for entry of observations
End Patrol	Ends the Patrol
Pause Patrol (Rest)	Stops recording track information during extended rest periods to avoid having the track information accumulate. This option should only be used during extended stationary rest periods.
Resume Patrol	Once resumed the track information will resume from the last recorded position. All patrols should resume the GPS track before resuming the patrol or risk losing their track positions.
	Opens up the options screen
	Displays the interval of when GPS track points are collected. If there is no number then the device will not record track information. It is well advised to review this icon and make appropriate changes in the CyberTracker Properties - GPS tab (track timer) and re-export the patrol to the PDA

	Back arrow to return to previous screen
	Forward arrow to advance to next screen
	Saves the observation
Skip GPS	If no GPS signal is available users will be prompted to skip GPS collection and advance to the next screen. This will create a waypoint with no coordinate information.
Save As New Waypoint	Creates a new GPS waypoint location and assigns the observation to the new waypoint
Add To Last Waypoint	Assigns the observation to the previous waypoint. Used when multiple observations are recorded at a single location

- Click **Make Observation**
- Start by making a single observation about a **live animal sighting.**
- Take a **photo** of the observed animal
- Click **Save As New Waypoint**
- Click the icon **Save the Observation**
- Repeat the process and select **Sign - Indirect Evidence** and **save the observation to the last waypoint**

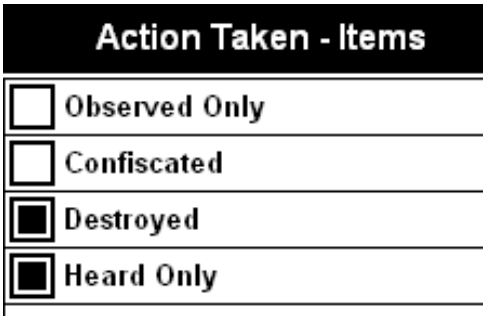
Using Multi-Selects in CyberTracker

A multi-select attribute allows for multiple items to be checked off in a single screen. The following screens are linked to the initial multi-select screen. This results in a more streamlined data entry where the user does not have to enter in multiple observations of the same attribute. The value of the multi-select that is linked to attribute will appear in brackets next to the attribute name at the top of the screen.



Infraction (Destroyed)	Infraction (Heard Only)
Hunting In Protected Area	Hunting In Protected Area
Illegal Entry	Illegal Entry
Possession of Firearms	Possession of Firearms
Possession of Wildlife	Possession of Wildlife
None	None

For the next observation you will use the category **Action Taken Live Animals** which will have the multi-select option available.



Action Taken - Items
☐ Observed Only
☐ Confiscated
■ Destroyed
■ Heard Only

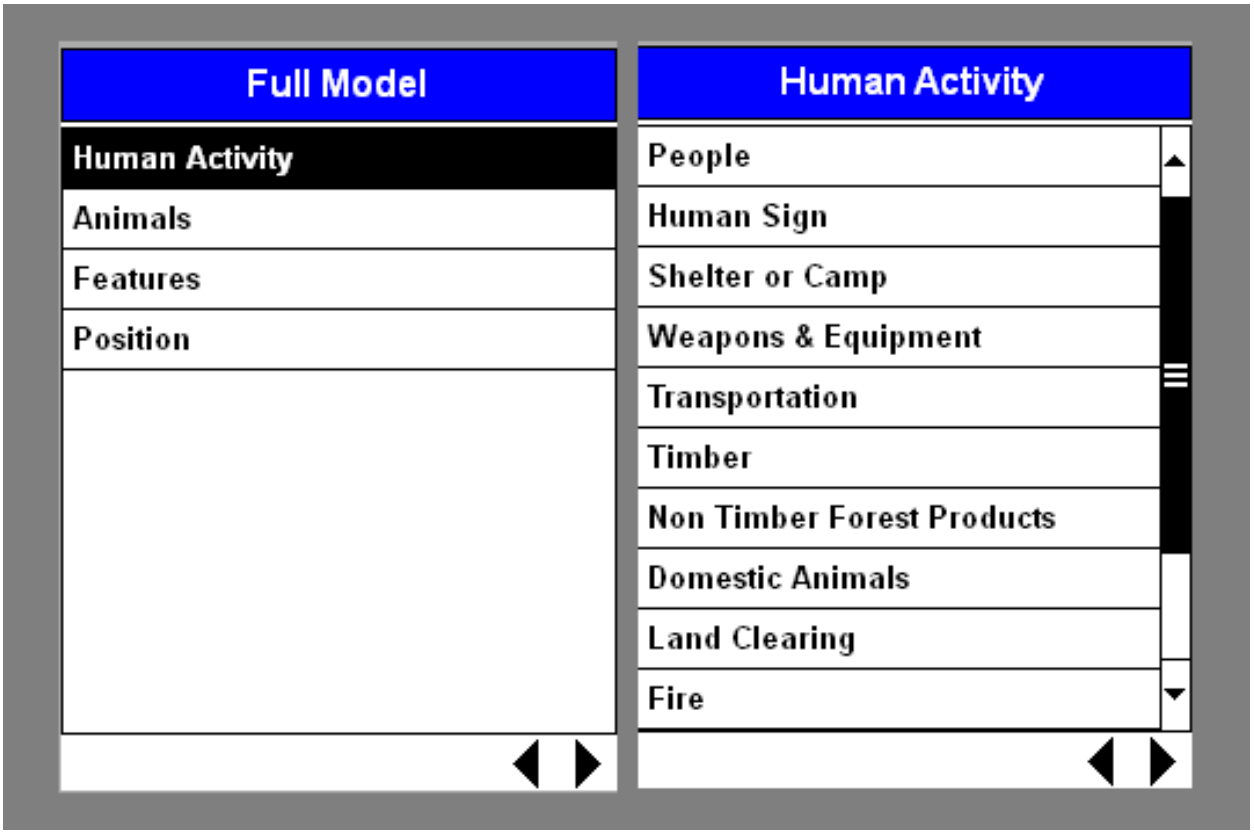
- Create a single observation at a single location using the multi-select option **(Destroyed & Observed Only)**
- Create more observations using the multi-select with different combinations
- Create multiple observations at a single waypoint
- After creating multiple observations at multiple waypoints click **End Patrol**
- Click **Save** to finalize the patrol

Create a Patrol using the Full Data Model

Once CyberTracker has returned to the initial screen of Start New Patrol & Exit CyberTracker you are now able to start a new patrol. For this patrol you should explore some of the other observation items available to you in the Full Configured data model.

To select the Full data model you will need to exit CyberTracker and select the Full data model from the application name list.

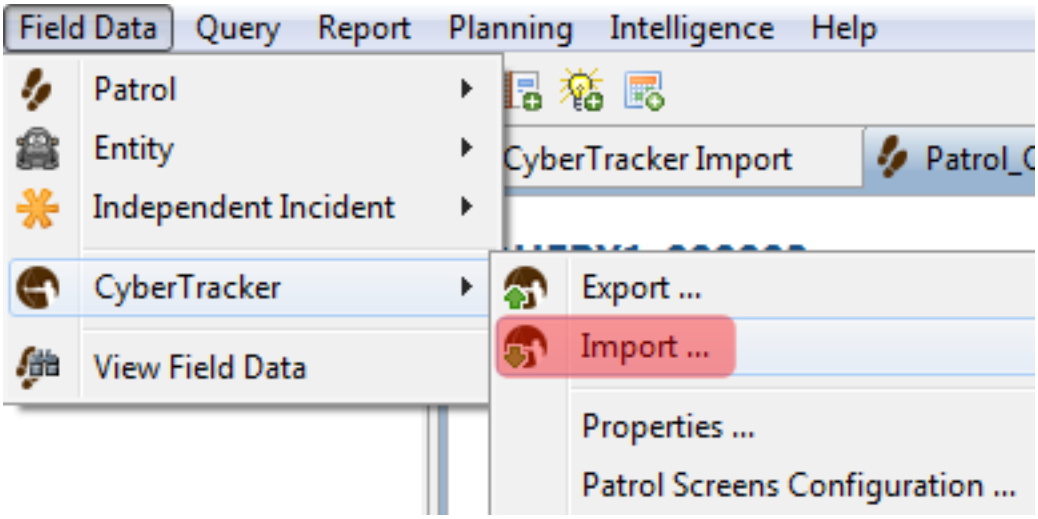
Note: When using the full data model it is easy to become overwhelmed in the size of the model. This is expected and the intention of this portion of the module. By demonstrating the difficulty of using the entire data model you will quickly see the benefit of a configured data model that has been simplified to suit the needs of the patrol team.



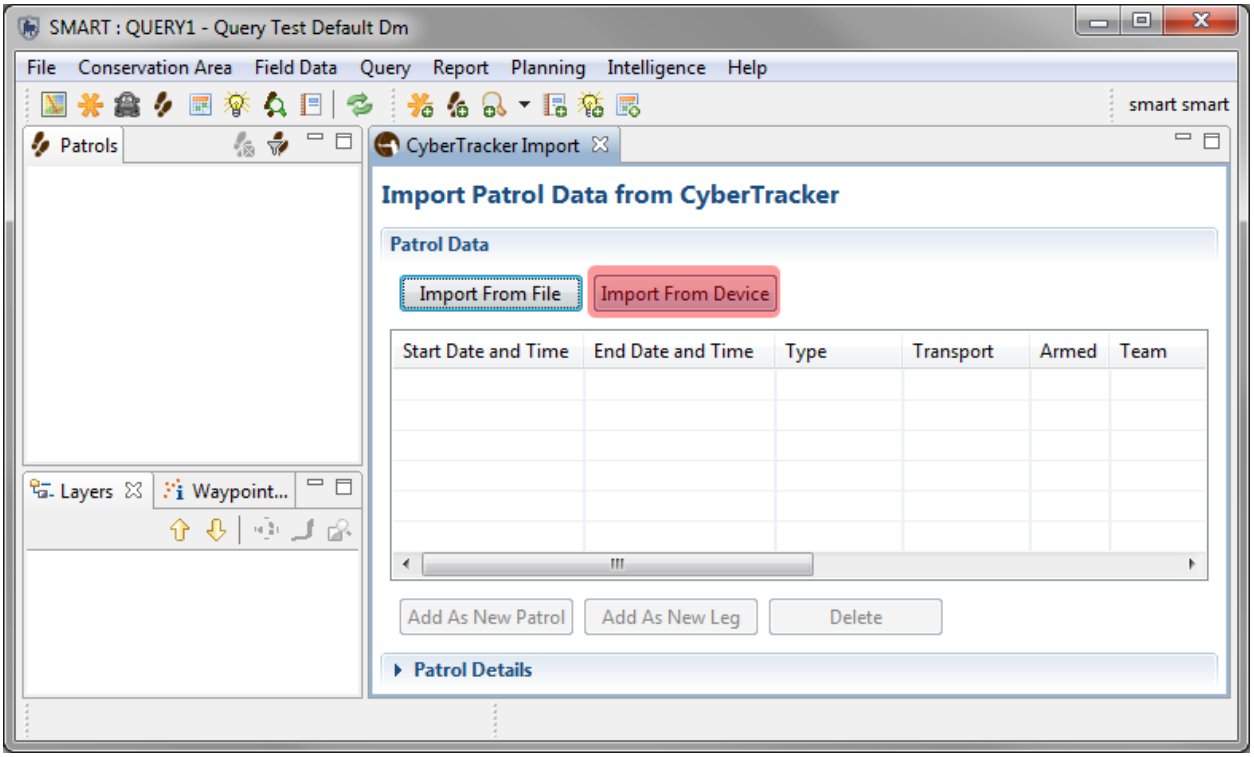
- Complete a couple small patrols using the **Full Data Model**
- After completing a couple patrols using the full data model exit out of CyberTracker and select the second configured data model and complete a couple patrols.

Importing CyberTracker Patrols into SMART

After data collection has completed it is time to import the patrol information into SMART. Unlike a standard GPS import, a CyberTracker PDA import will bring in the GPS track and waypoints and all the associated observations with those waypoints.



- Plug the CyberTracker PDA back into the computer with SMART installed
- From the menu select **Field Data - CyberTracker - Import**



Import From Device - Used on the first import and will directly import the patrols from the CyberTracker PDA.
Import From File - If the CyberTracker patrols were not assigned in SMART the files are located in the filestore for that particular Conservation Area. By selecting this option SMART will access the filestore allowing users to assign these patrols after the PDA has been disconnected.
Add As New Patrol - Creates new SMART patrols from the selected CyberTracker patrols.
Add As New Leg - Takes the selected CyberTracker patrols and allows users to assign them as individual legs of a multi-leg SMART patrol. Users will be prompted to which patrol this leg will be applied to.
Delete - deletes the selected imported CyberTracker patrols.
Patrol Details - expanding of this window will allow for a detailed view of the CyberTracker.

- Select a single patrol then click the icon **Import From Device** (right-click will bring up same functions)
- Select **multiple patrols** and then assign them as **New Patrols**
- Review the patrols and observations

Internationalization

Much like the base application of SMART the CyberTracker plug-in supports multiple languages. The installation of CyberTracker language packs are required before the supported languages will be shown in the plug-in.

- To access the language packs browse to the folder **Module 9\CyberTracker\Language Packs**
- To access the translation packs browse to the folder **Module 9\CyberTracker\Translation Packs**

Language Packs - Allows for supported languages on the CyberTracker PDA
Translation Packs - Allows for supported languages in the SMART - CyberTracker plug-in

- To install the packs **unzip** the contents of the language or translation packs into **the smart\plugins directory**

Optional Practice Exercises

The exercises and examples covered in this module have covered the core functionality of the SMART-CyberTracker plug-in but did not cover all aspects of the software. Additional practice exercises are a good way to increase your skills with the SMART-CyberTracker software.

Exercise 1 - Configurable Data Model
In the previous examples you made some minor changes to the configurable data model but did not explore some of the more advanced manipulations.

- Build up a multi-tier (multi-group) model using groups and sub-groups
- In the final tier (category) chose a category with a tree attribute and flatten it
- Select a few attributes and assign default values and make then not visible
- Edit the list of a list attribute (reorder and disable)
- Upload the new data model to the CyberTracker PDA
- Collect data and transfer the data back to SMART

Exercise 2 - Patrol Configuration

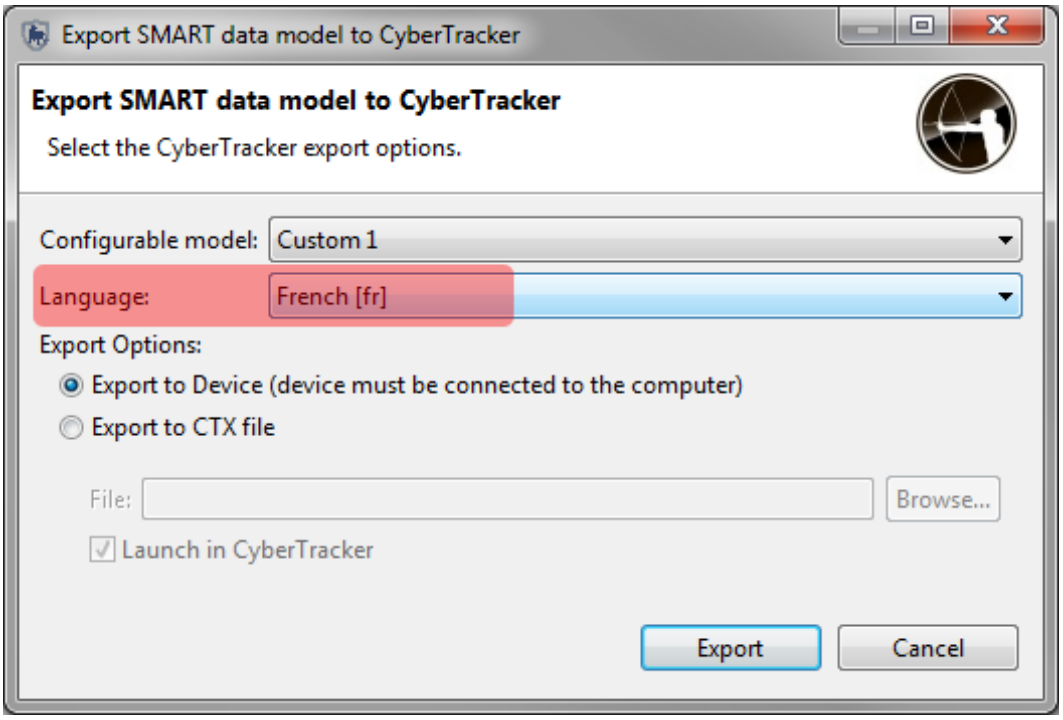
The previous examples there was no customization to the patrol configurations. For this example you will set the patrol configuration parameters using the visible and default value options.

- Create a CyberTracker application (upload) with a few of the screens set to not visible and the default values set
- Create a CyberTracker application (upload) with 100% of the screens made not visible and all values set with default values
- Upload the new data model to the CyberTracker PDA
- Collect data and transfer the data back to SMART

Exercise 3 - Internationalization

After installing the language packs and translation packs of interest.

- Edit the Configurable Data Model and provide translations for the categories, attributes and values.
- Upload to the PDA using the alternate language
- Collect data and transfer the patrols back to SMART



Module 10 – Entity Plug-In

Objective:

This Training Module will provide instruction on how to install and use the Entity plug-in, which is used for collecting and monitoring data on fixed or moving (transient) entities.

- **Installing the Entity plug-in in SMART**
- **Creating Entities**
- **Configuring Entities**
- **Adding Data Model entries for Entities**
- **Recording Entity Observations**
- **Querying Entity Observations**

Detailed Steps:

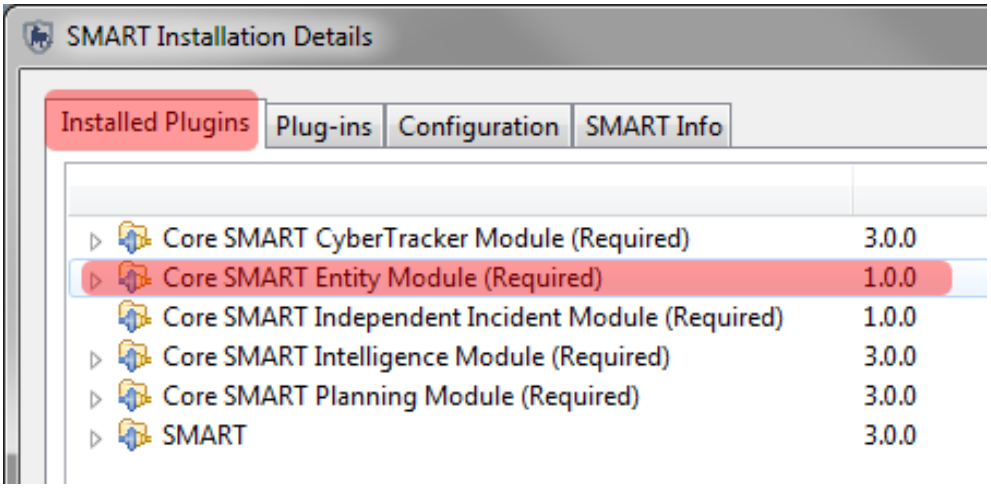
The Entity plugin-in is an optional plug-in designed to monitor information about specific features (entities) within the Conservation Area. In this module you will learn the process of setting up and configuring Entities in a manner that will allow for the recording of field information related to the Entities. The last steps in this training module will demonstrate the retrieval, querying and mapping of the Entities.

Installing the Entity plug-in in SMART

Note: The Entity plug-in is an optional plug-in that must be installed before proceeding with this training module.

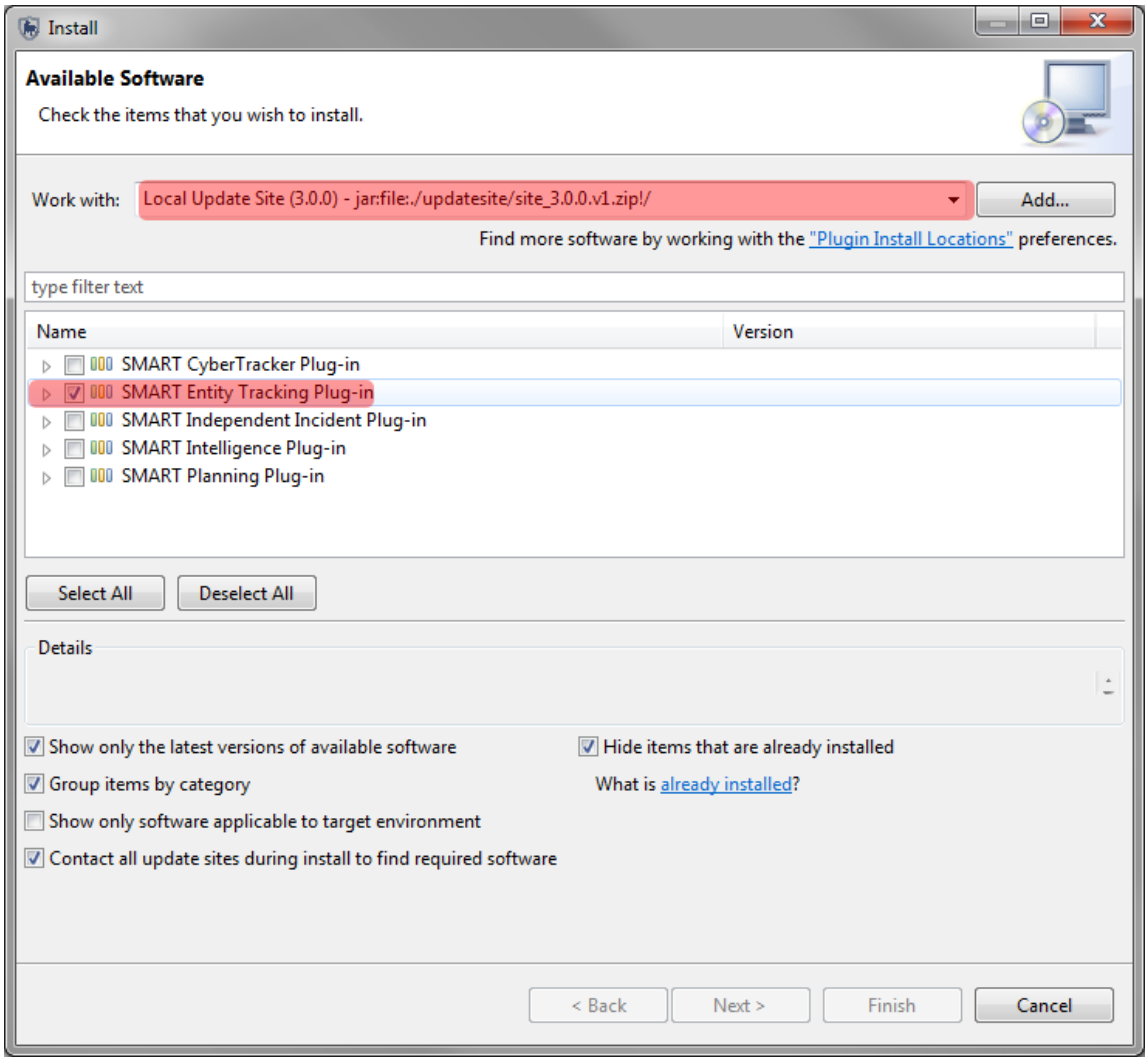
If you are unsure whether your installation of SMART has the Entity plug-in installed, you will need to:

- Open the **Help - About SMART - Installation Details - Installed Plugins** tab



If you already have the Entity plug-in installed on your computer then skip the following step.

- From the menu select **File - Install New Plugins**



- Select the **Local Update Site** from the drop-down list
- Check the box next to **SMART Entity Tracking Plug-in**
- Click N**ext**
- Complete the install process for the Plug-in and **restart** SMART

Note: After the installation SMART requires a restart and users will have to log back into the Conservation Area.

Creating Entities

As with many aspects of SMART, some configuration is required before users are able to record and track the entities. Entities can be a fixed feature that does not change location over time (such as a gate, bridge, lake, or saltlick) or a feature that moves (such as an animal). The locations of transient features are recorded

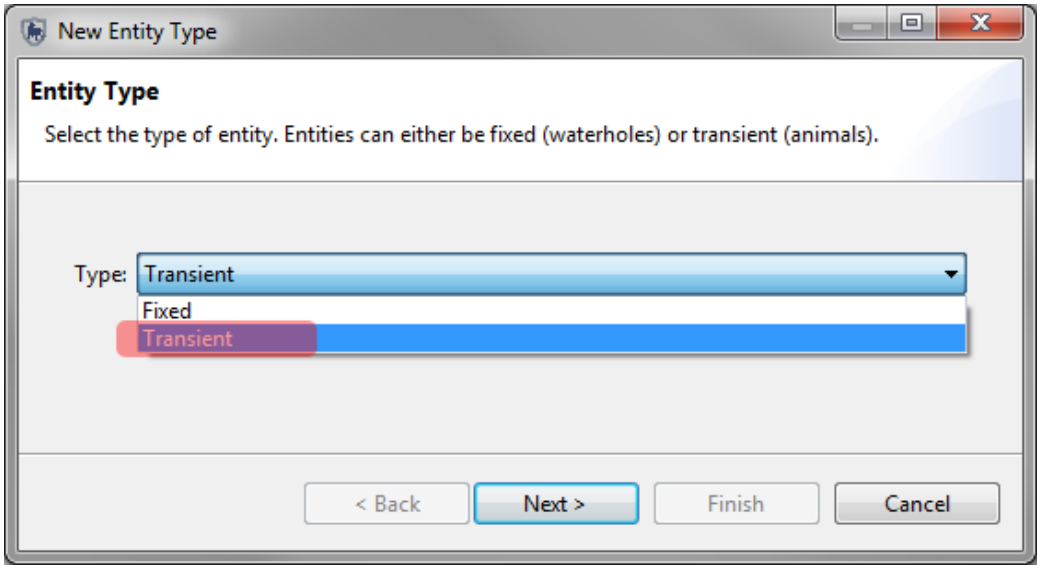
through the regular patrol observations data forms. Fixed Entities have their locations entered directly into the Entities interface once it has been completed.

Entities are organized into Entity Types that allow for monitoring and tracking of similar features (species, family groups / herds).

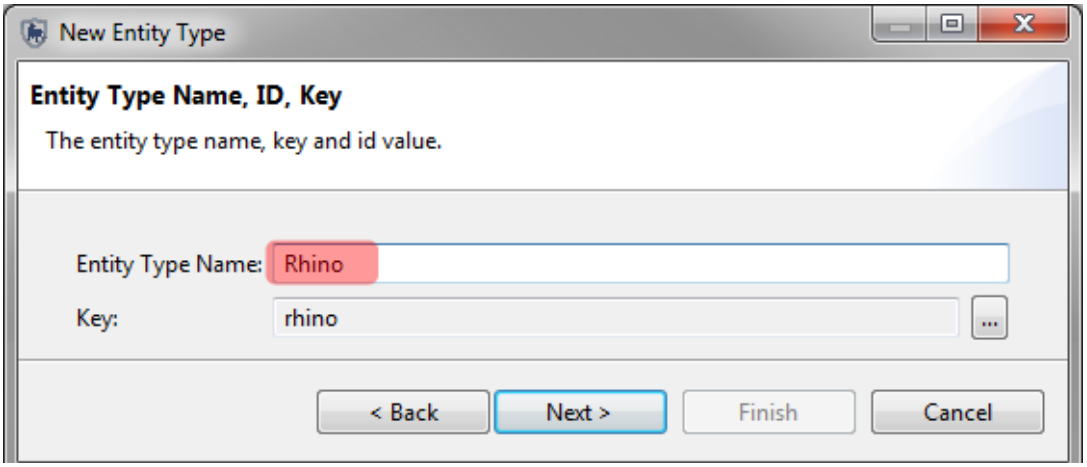
The first step in the process is to create the Entity Type.

- From the menu click **Field Data - Entity - New Entity Type**

For the first Entity Type you will create a transient Entity that will represent an animal species or population



- Select **Transient** then click **Next**
- **Enter in a name** for the Entity Type and click **Next** then **Finish**



Fixed Entity

- Repeat the process but select **Fixed**
- **Enter in a name** for the Entity Type and click **Next** then **Finish**

Entity Overview

The overview page contains four tabs that are found at the bottom of the main window.

Entities - creation of individual entities or for importing/exporting entities
Configuration - sets up the series of fixed attributes for the entity type
Sightings - a quick query framework that returns the tabular results of the entity sightings
Map - opens a mapping interface showing the locations of the entities

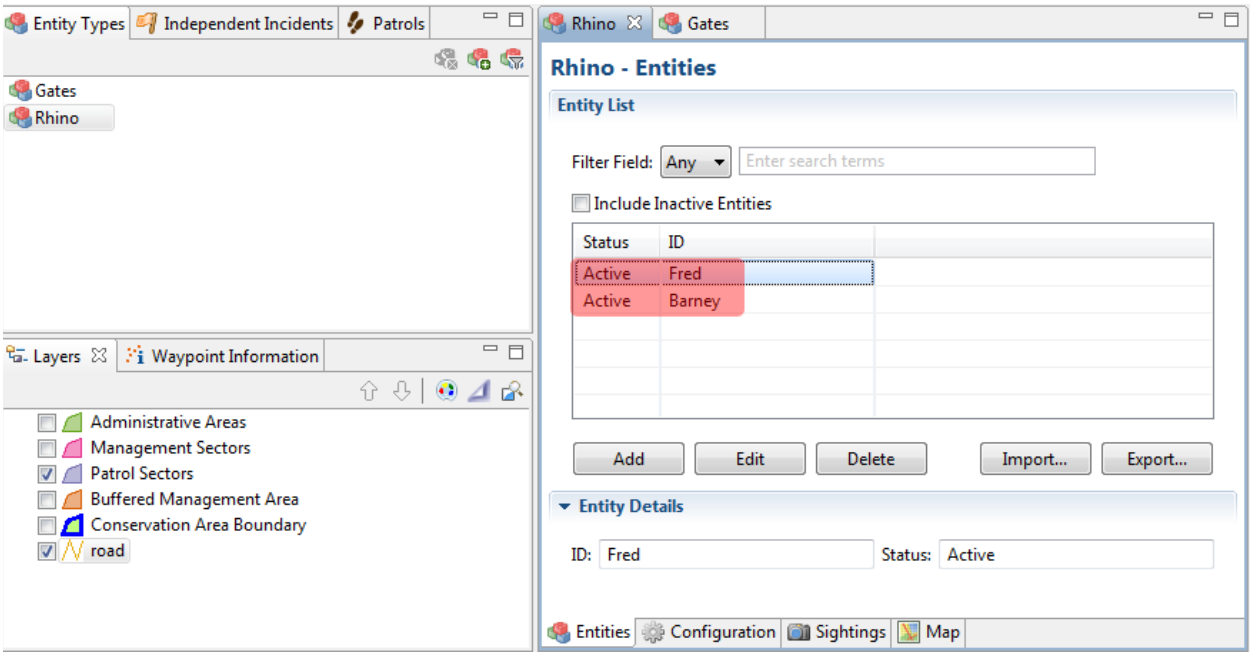
Adding Individual Entities

After creating the two Entity types for a fixed and transient group, you will now go through the steps of creating individual entities.

Transient Entities

Transient entities are created without any location information, because the location information will come from patrols or surveys.

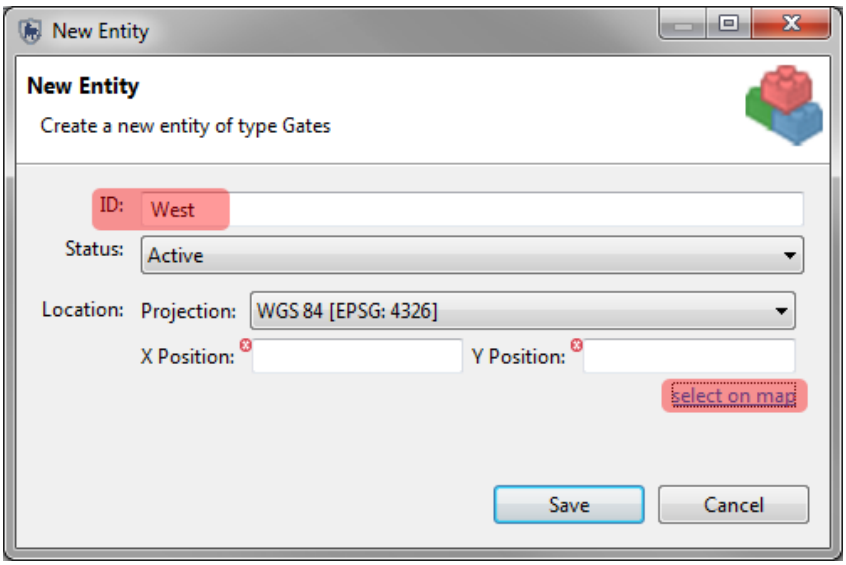
- In the overview window double-click the first Entity Type (transient) then click **Add**
- Provide a **name** for the entity (*many animals are given their own names*) then click **Save**
- Repeat the process and **add more entries** for this entity group

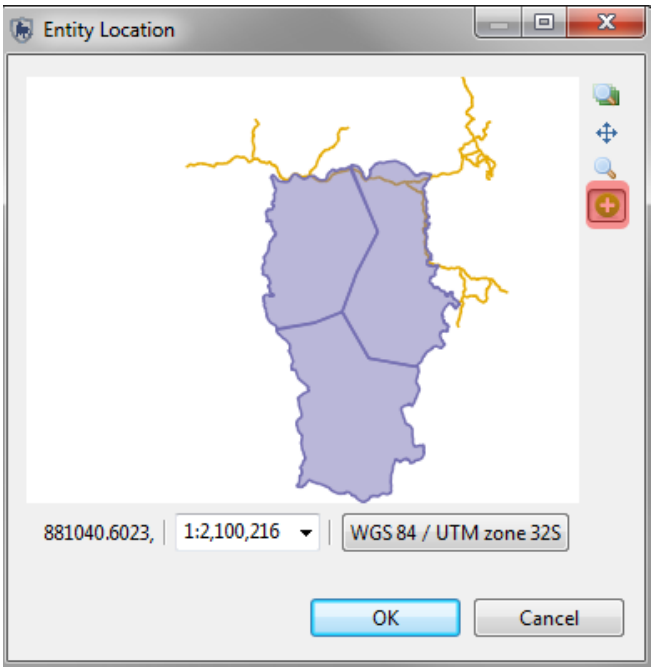


Fixed Entities

Fixed entities require users to add the location information when creating the individual entries. Positional information can be entered if the coordinates are known, or specified via a mapping interface if the exact location is not known.

- In the overview window select the first Entity Type (fixed) then click **Add**
- Provide an **ID** for the entity then click **select on map**



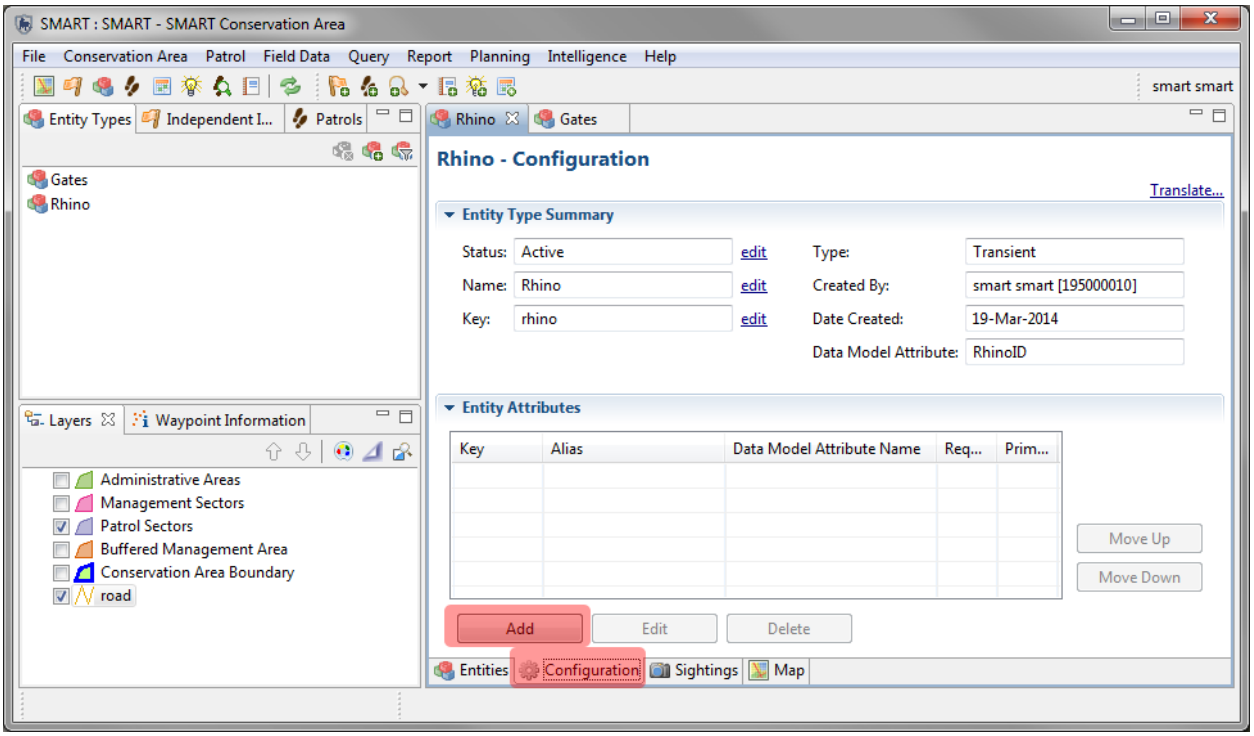


- Select the **Add Point** icon and select a location then click **OK** then **Save**
- Repeat the process and add a **few more individual entities** to the fixed group

Configuring Entities

At this point you should have a few fixed and transient entities. Currently these entities have very little information related to them other than a name, status and if fixed, a location. The next steps in this training module will be to configure the entities with the information that you wish to collect and monitor for these entity groups.

Each entity type will likely require a unique set of attributes and possibly new category entries in the Conservation Area data model.

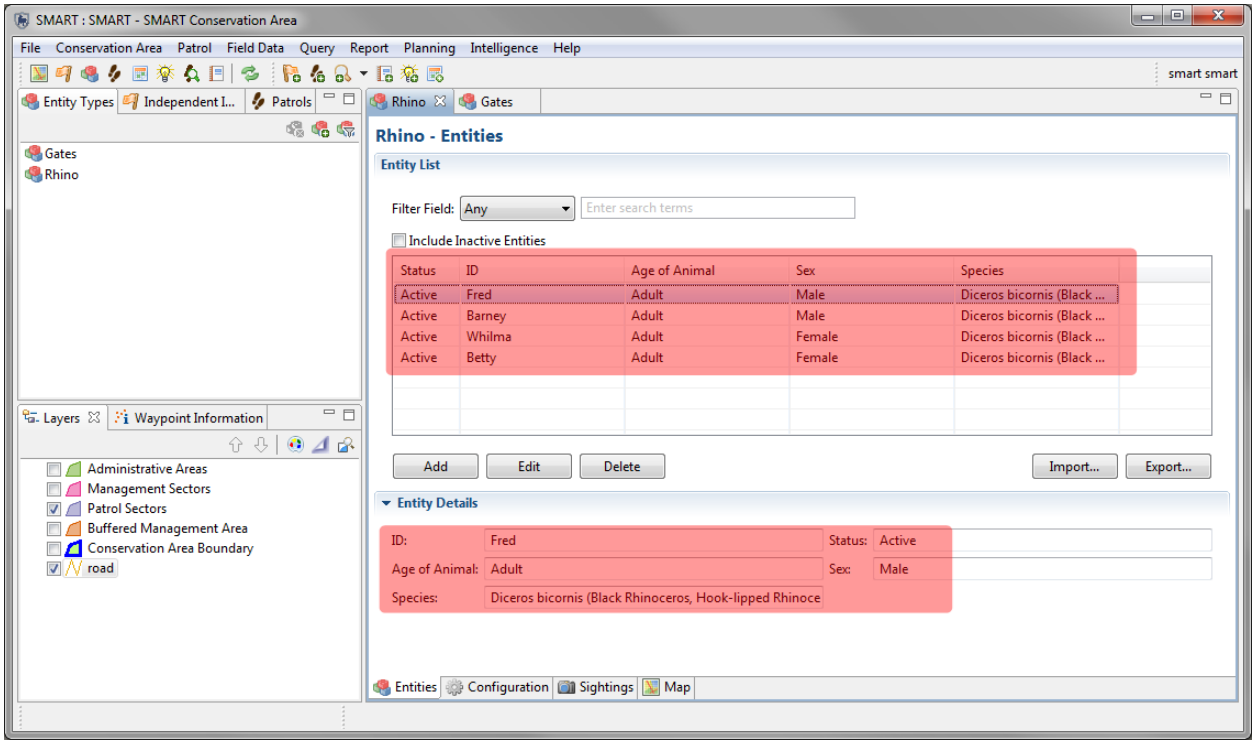


- Select the tab Configuration and click **Add**

Attributes added at this step are applied directly to the Entities and are generally considered static or ones that do not change frequently. *Examples: Name, Date of Birth, Offspring*.

- Select **a few attributes** from the data model and apply them to the selected Entity
- Return to the main **Entities Tab**

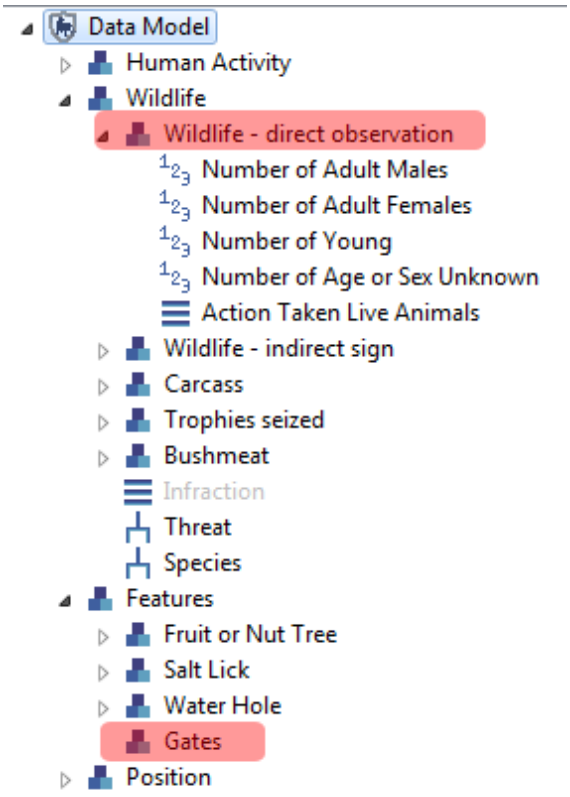
Note: If no appropriate attributes exist then you can create new ones for the Entity.



- Populate **the individual Entities with the newly applied attributes**
- View the attributes in the **Entity Details** (lower window)
- Repeat for all **Entity Types**

Adding Data Model Entries for Entities

When an Entity is created, an ID attribute is automatically created and added to the data model, but the attribute is not applied to any specific category. Before the Entity ID attribute can be recorded in a patrol observation, it must first be assigned to a category or categories.

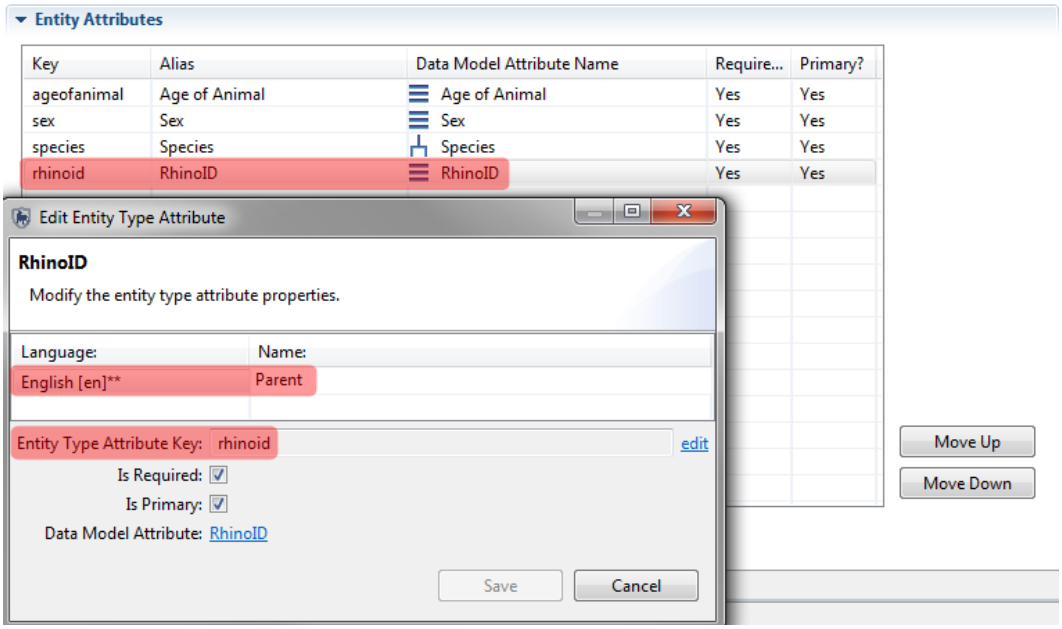


- From the menu open up the **Conservation Area Data Model**
- Add the **RhinoID** attribute to the category of **Wildlife - direct observation**
- Add a new category of **Gates** to the **Features** category
- Add the **GatesID** attribute to the **Gates** category

Creating Parent / Child Relations

Entities can be configured to provide a parent / child relationship to monitor family relations within Entity Types. This can be done by referencing the automatically created ID for the entity type.
An alias for the ID attribute can be applied to indicate parent(s) / child(ren).

Note: Aliases can be applied to any existing attribute.

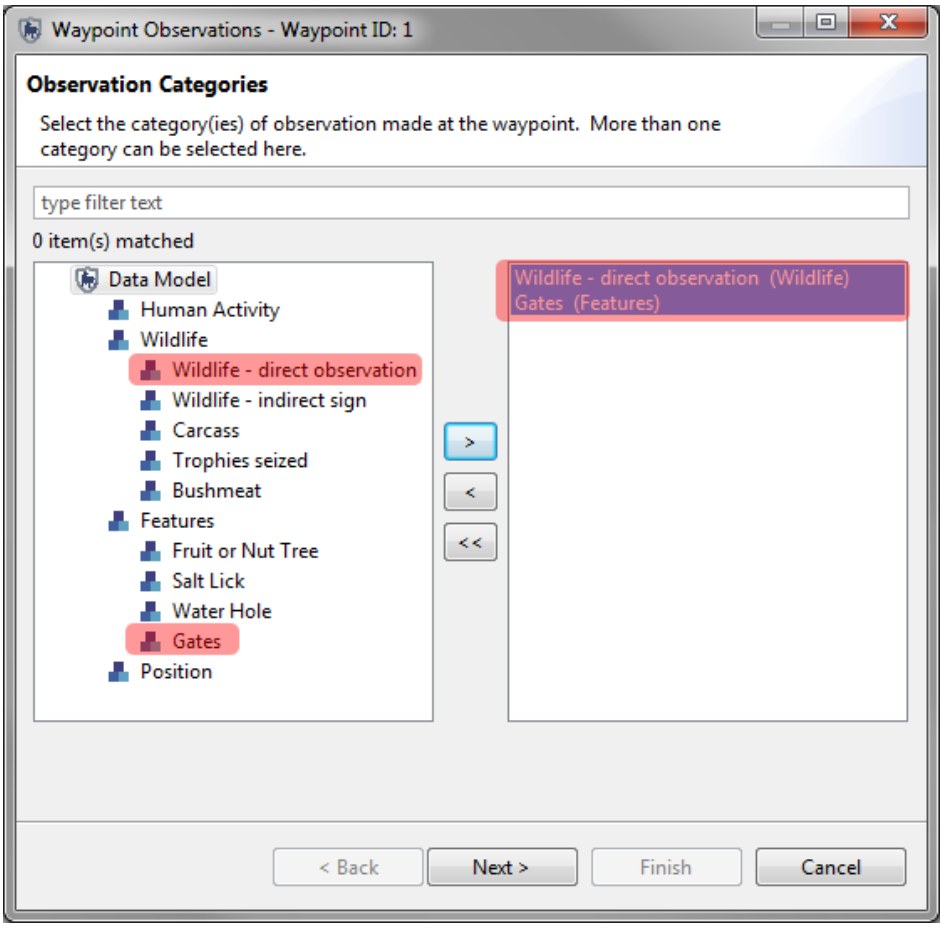


- Select an **individual entity** and select the **Configuration** tab
- Click **Add** and select the **entity ID**
- In the **Name** field type in **Parent (or) Child**
- Click **Save**
- Return to the **Entities tab** and **populate** the new **parent or child attribute**

Recording Entity Observations

After adding the Entity ID(s) to a data model category, it is now possible to record these Entities as part of a patrol.

- Create a sample patrol with a single waypoint with observations using the categories of **Wildlife - direct observation** and **Gates** along with their attributes.
- Repeat the process and add more observations to multiple waypoints in multiple locations.



Querying Entity Observations

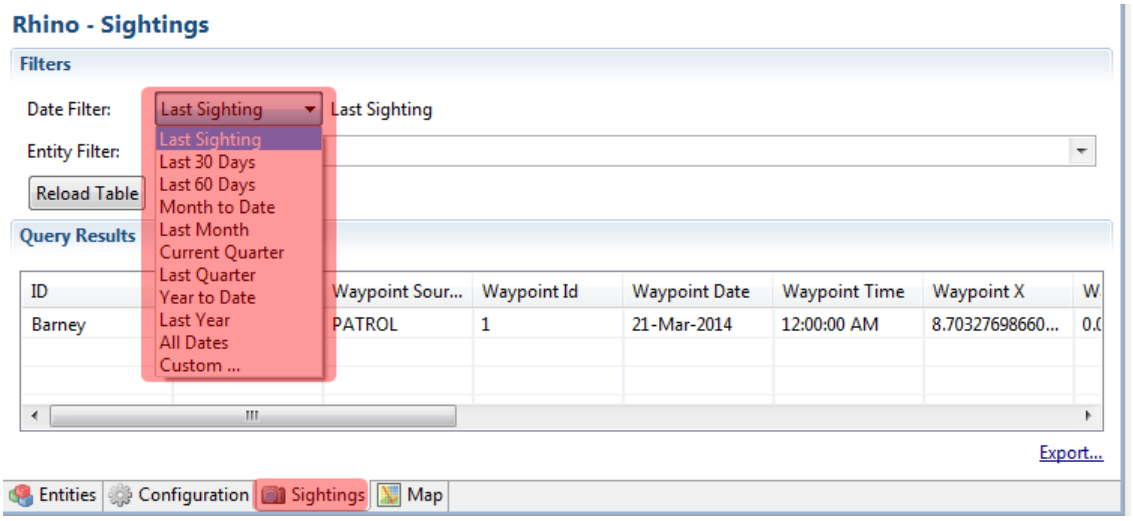
At this point in the training module you will have:

- created Entities that are fixed in location or transient
- applied attributes to the Entities
- applied Entity IDs to data model categories
- recorded Entity information in a patrol

Note: all of these steps are necessary before any querying or reporting can occur

Entity Sightings

Entity querying on a basic tabular view is possible in the Entity Sightings tab. This table can be filtered for the Last Sighting or other date based filters.

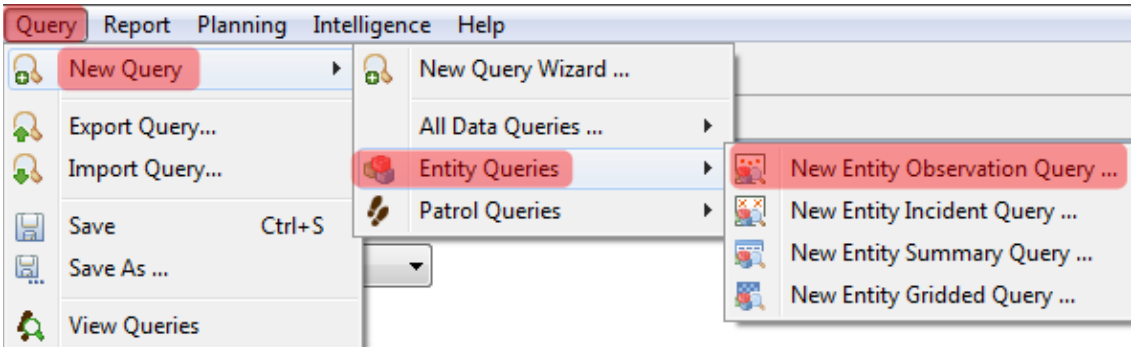


- Open the **Entity Sightings** tab and select the Date Filter of **Last Sighting**
- Repeat the process with **All Dates**

Building Queries in the Query Perspective

If more detailed queries are required, then users should use the query perspective and build the required queries using procedures learned in previous modules of the SMART Technical Training manual. The results from an Entity Query will be the same as for other queries; however Entity Queries will contain a specialized set of filters that access Entity Type attributes.

Note: The choice for an Entity Query will not be available if the Entity Tracking plug-in has not been installed.



- From the file menu select **Query - New Query - Entity Queries - New Entity Observation Query**
- In the Query Filter window build a query using the **Entity Type Filters**
- **Run and review** the results

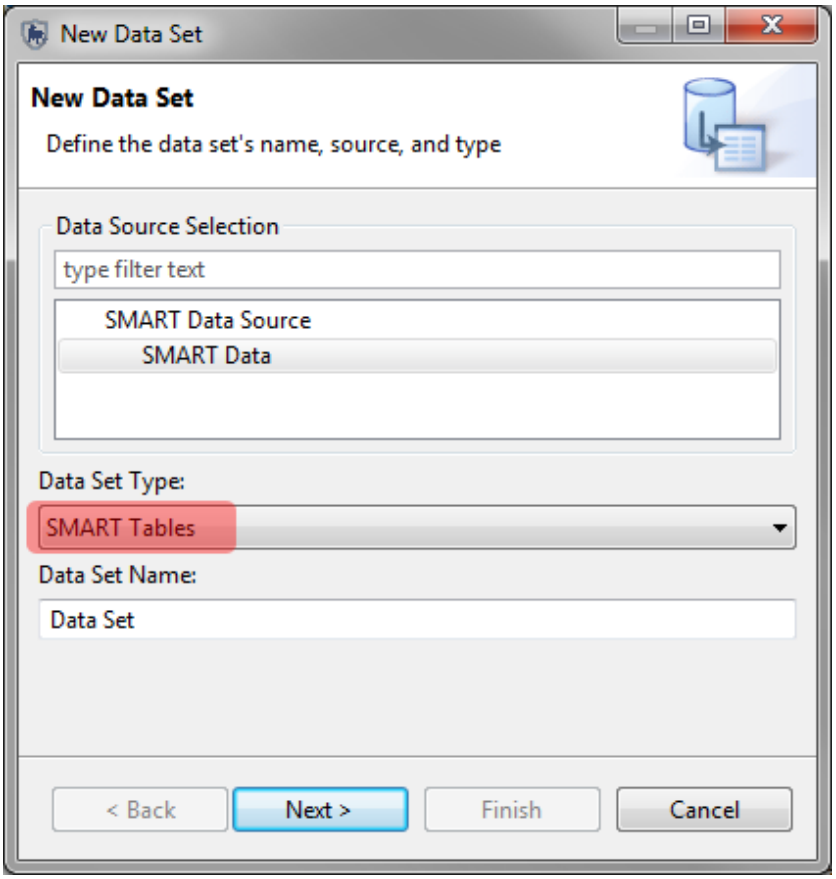
Optional Practice Exercises

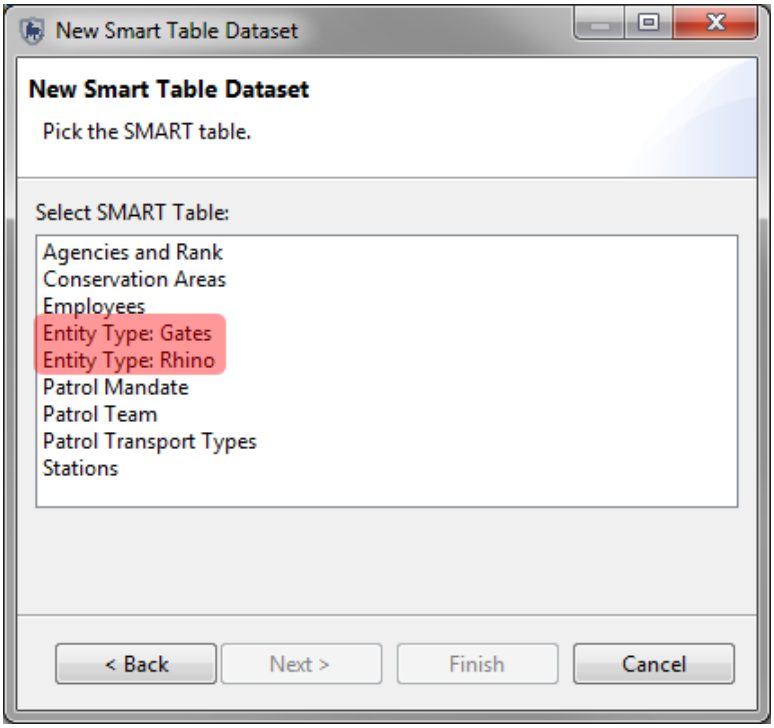
The exercises and examples included in this training module have covered the core functionality of the SMART Entity Tracking plug-in, but do not cover all aspects of the plugin. Additional practice exercises are a good way to increase your skills with this optional SMART plug-in.

Exercise 1 - Building Entities into Reports

For this optional exercise you will need to build a report showing the recent activity of the new Entities.

- Prepare a few **queries** for use in the report and add them to the report
- Add **the Entity Tracking tables** to the Report framework



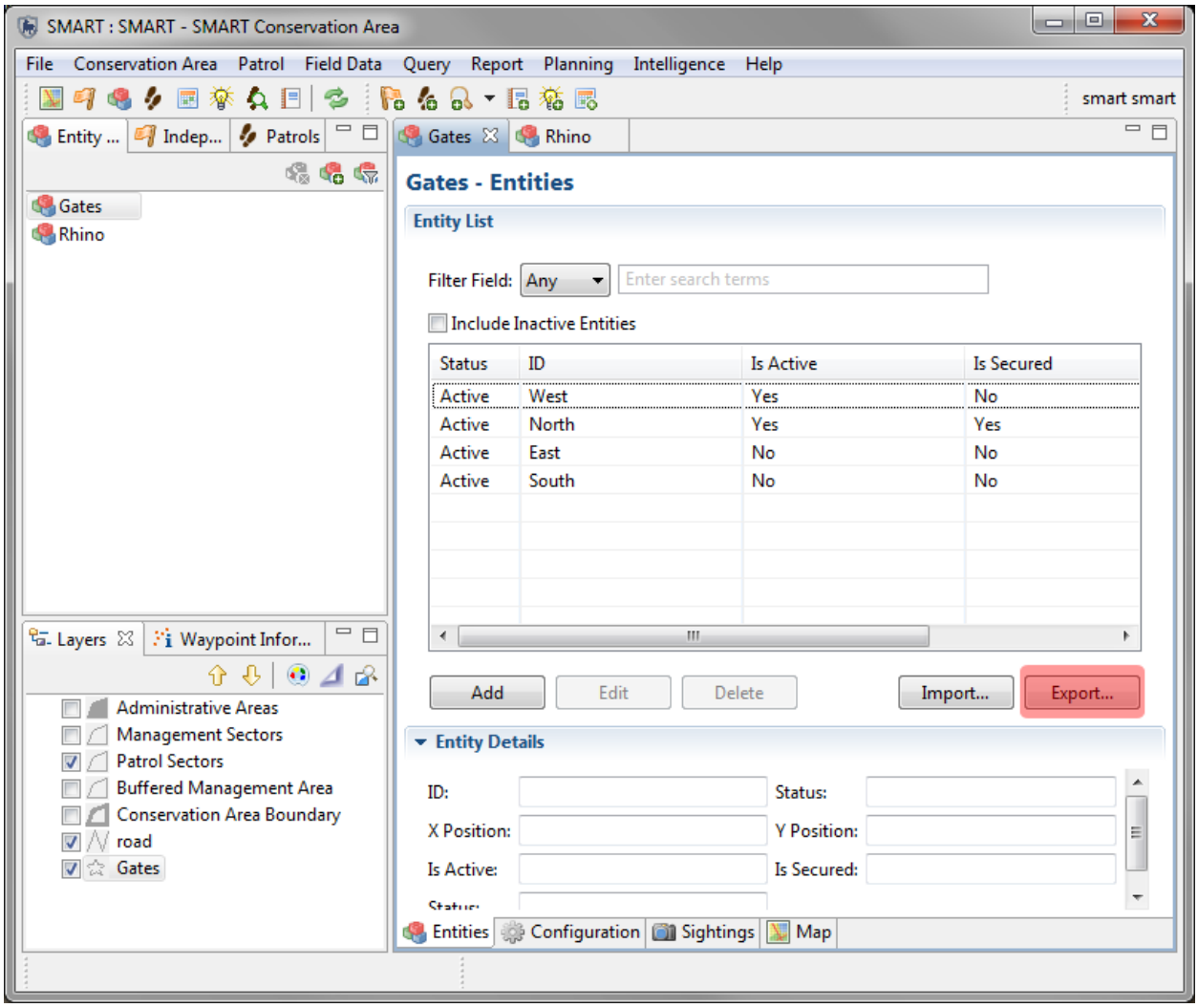


- Create a new map object that shows the location of the Entities

Exercise 2 - Exporting & Importing Entities into other Conservation Areas

The Entity Tracking plug-in has similar functionality to other components of SMART and allows for Entity Types to be created in one Conservation Area and then exported for use in a different Conservation Area.

After creating new Entity Types and configuring each one with the appropriate attributes:



- Export the selected **Entity Type**
- **Logout** of the current Conservation Area and **login to a different Conservation Area**
- Import the **Entity (csv) files** into the other Conservation Area

Module 11 – Independent Incident Plug-In

Objective:

This Training Module will provide instruction on how to install and use the Independent Incident plug-in, which is used for collecting and monitoring data that have come from sources other than the regular patrols or surveys.

- **Installing the Independent Incident plug-in in SMART**
- **Creating Independent Incidents**
- **Configuring Independent Incidents**
- **Recording Independent Incident Observations**
- **Querying Independent Incident Observations**

Detailed Steps:

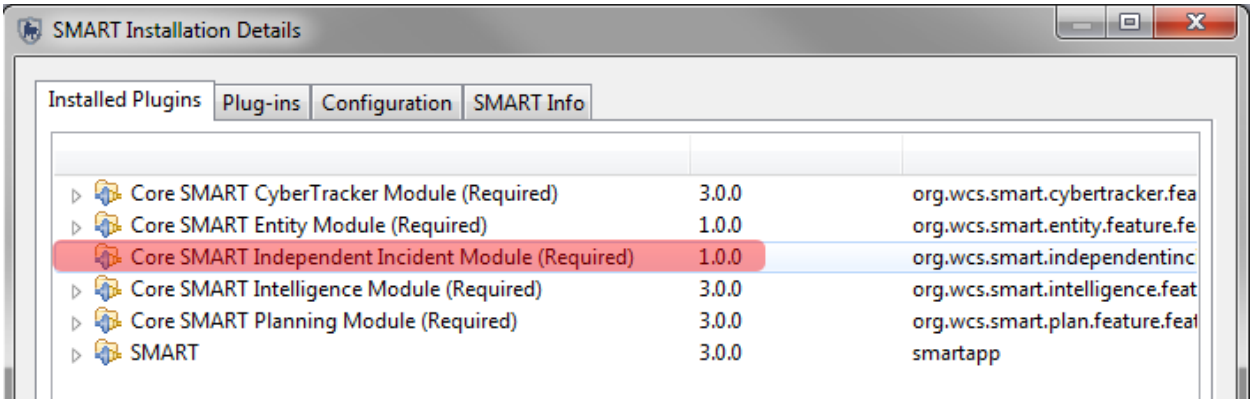
The Independent Incidents plug-in is an optional addition designed to record and query observations from sources other than standard patrols. While patrols and surveys are the primary sources of field information, other sources of information (researchers, NGOs, community and public) could potentially provide valuable information that would be difficult to enter into SMART without this optional plug-in.

Installing the Independent Incident plug-in in SMART

Note: The Independent Incident plug-in is an optional plug-in that must be installed before proceeding with this training Module.

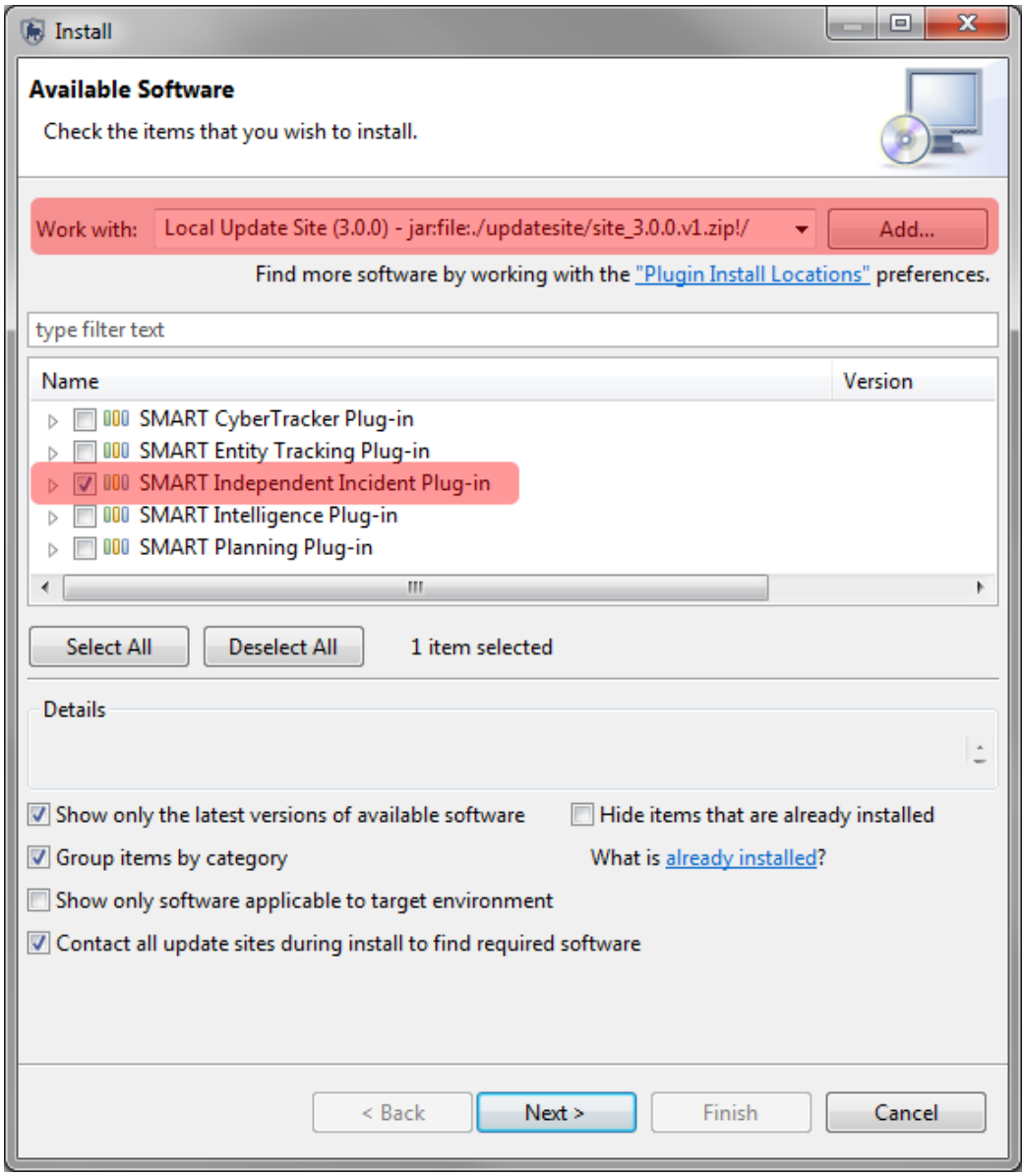
If you are unsure whether your installation of SMART has the Independent Incident plug-in installed, you will need to:

- Open the **Help - About SMART - Installation Details - Installed Plugins** tab



If you already have the Independent Incident plug-in installed on your computer, then skip the following step.

- From the menu select **File - Install New Plugins**



- Select the **Local Update Site**
- Check the box next to **SMART Independent Incident Plug-in**
- Click **Next**
- Complete the install process for the Plug-in and **restart** SMART

Note: After the installation, SMART will require a restart and users must log back into the Conservation Area.

Creating Independent Incidents

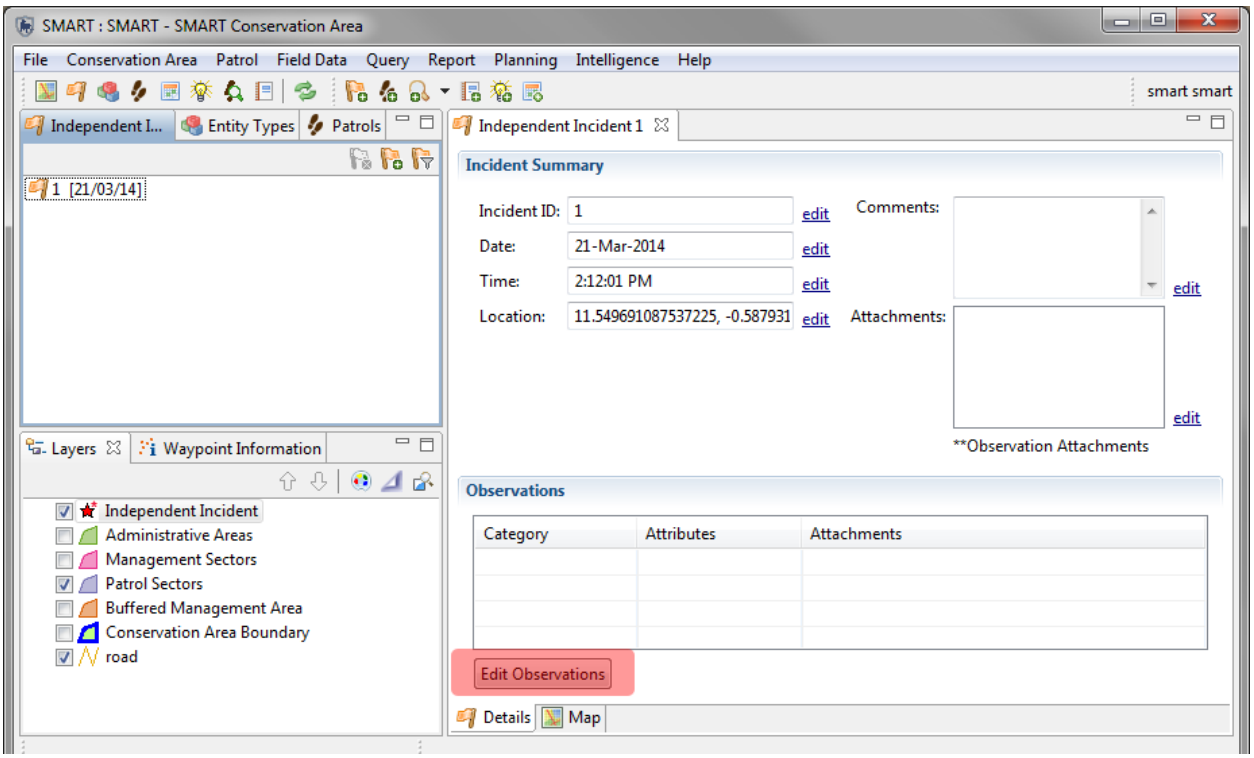
The creation of Independent Incidents in SMART is done through a simple wizard that guides users through the steps necessary to complete the process.

- From the menu select **Field Data - Independent Incident - New Independent Incident**
- Complete the fields **Incident ID, Date and Time**

The Location information for the Independent Incident can be entered directly into the XY fields if the exact coordinates are known. If the coordinate information is not known, the location can be specified via a mapping interface.

- Click **Select on Map ...** to open the mapping interface
- Select a **location** within the Conservation Area using the add point tool
- Click **OK**
- Complete the remaining steps in the wizard

After the final steps have been completed, the Independent Incident overview window will open. If there are any edits or corrections to the Independent Incident information click the "edit" link located to the right of the information.



Once the wizard has finished, the Independent Incident is in a similar state that a patrol would be in, at initial creation. The base information for the date, time, location and other attributes has been set, but the actual observation has not yet been entered into SMART.

- To enter in the Independent Incident information click **Edit Observations**

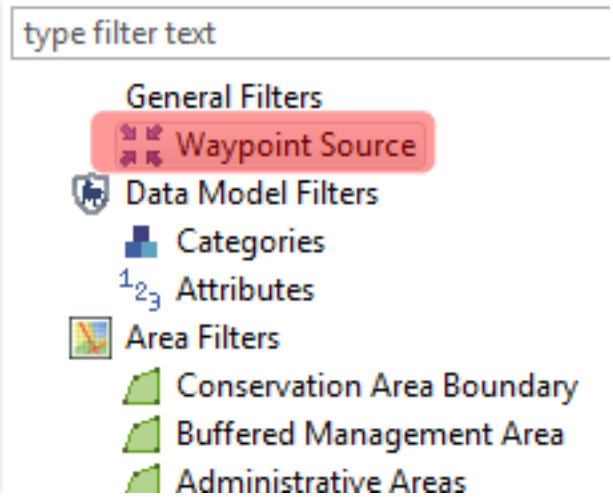
The observation interface will open as it would for a standard observation.

- Enter the information for the **Independent Incident**
- Repeat the entire process of creating and adding information for **a few more Independent Incidents**

Note: Attachments can be applied individually to the Independent Incident location and to each and every observation associated with the Independent Incident.

Querying Independent Incident Observations

Querying Independent Incidents is done through the query perspective - All Data Queries.
To isolate Independent Incidents, users will use the General Filter of "Waypoint Source". The results will include only the observations that were created in the Independent Incident interface.



- From the menu create a new query from the option of **All Data Query - Observation Query**
- Select **Independent Incident** from the **General Filters - Waypoint Source**
- Run the query and view the results in the **tabular and mapping tabs**

Optional Practice Exercises

The exercises and examples included in this module have covered the core functionality of the SMART Independent Incident plug-in but do not cover all aspects of the plug-in. Additional practice exercises are a good way to increase your skills with this optional SMART plug-in.

Exercise 1 - Creating Independent Incident Reports

For this optional exercise, you will build a report showing the recent activity of the new Independent Incidents that have occurred in the Conservation Area for the last year.

- Prepare a few **queries** for use in the report and add them to the report framework
- Add the new queries to the report
- Include a map of the incident locations