



2012 Training of Trainers Workshop

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Pretoria, South Africa

Technical Training Manual



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Module 1 – Configuring 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:

- 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:

Create a New Conservation Area

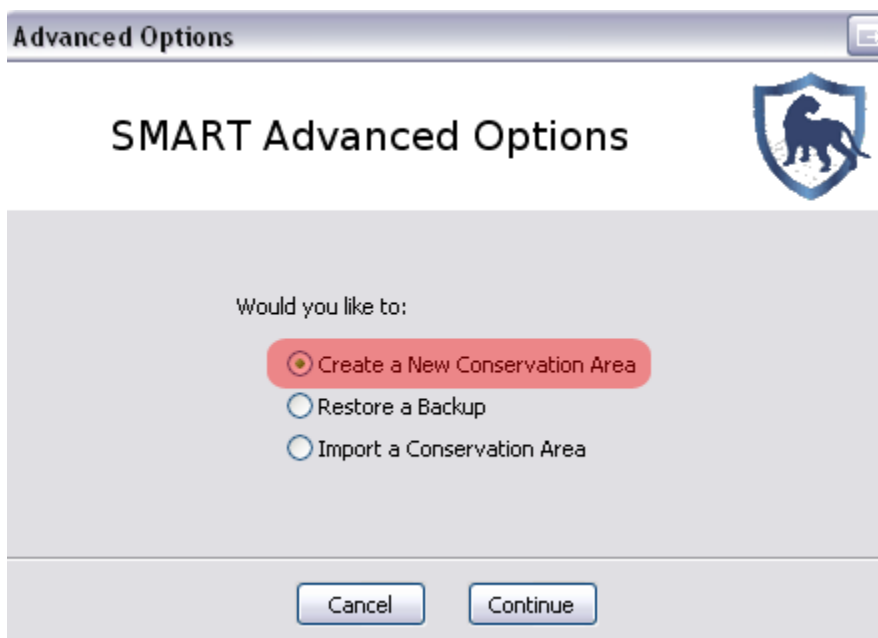
SMART has the ability to manage multiple Conservation Areas within a single database, and this version of SMART includes a sample Conservation Area that will be used in later training modules. You will create a second Conservation Area and begin the process of populating the database.

- Start the SMART application
- Click **Advanced...**



On the next screen, you can choose one of three options:

- Create a New Conservation Area
- Restore a Backup
- Import a Conservation Area

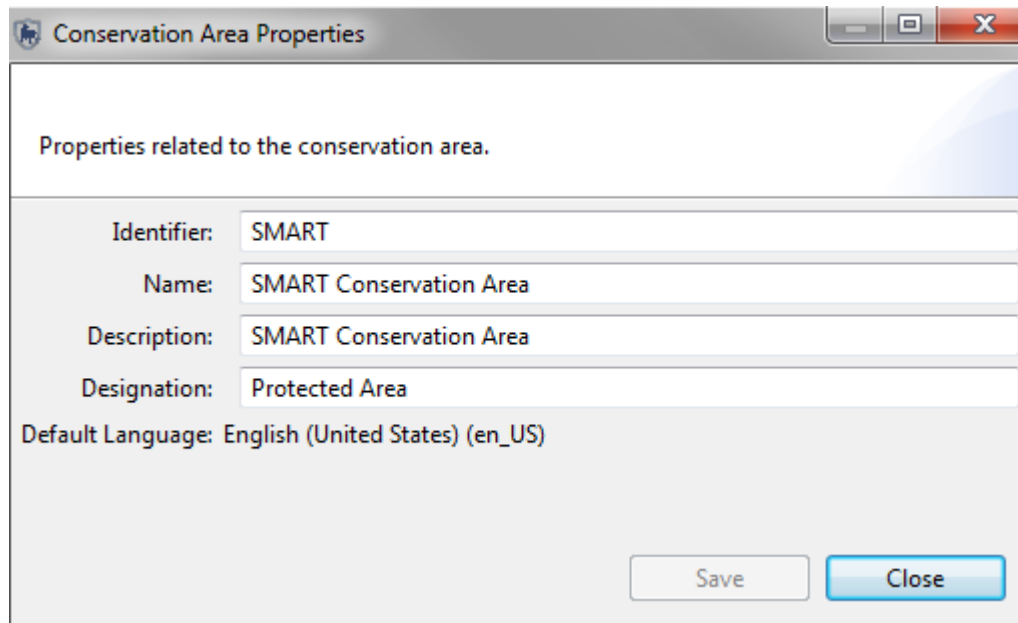


- Keep the default of Create a New Conservation Area
- Click **Continue**

Note: This option is required if no previous backups or templates exist. Creating a new Conservation area will likely be the most common method for organizations starting with SMART.

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.



Conservation Area Properties

Properties related to the conservation area.

Identifier: SMART

Name: SMART Conservation Area

Description: SMART Conservation Area

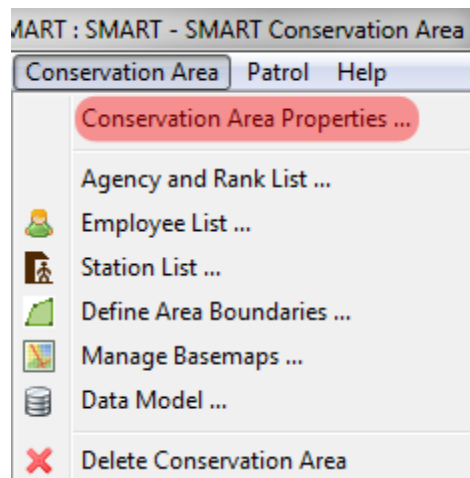
Designation: Protected Area

Default Language: English (United States) (en_US)

Save Close

- Enter in the following information:
 - Identifier: **SMART**
 - Name: **SMART Conservation Area**
 - Description: **SMART Conservation Area**
 - Designation: **Protected Area**
- Click **Next**

Note: Properties of the Conservation Area may also be modified later on, after initial Conservation Area creation (see screenshot below)



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: **Wednesday July 4 2012**
 - Birth Date: **April 05, 1980**
 - Gender: **Male**

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 User Name: **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.



The image shows the login screen for the SMART Spatial Monitoring and Reporting Tool. On the left is a logo featuring a blue silhouette of a panther standing on a checkered floor, enclosed in a blue shield. To the right of the logo, the word "SMART" is displayed in large, bold, blue letters, with "Spatial Monitoring and Reporting Tool" written in smaller blue text below it. The login form consists of three fields: "Conservation Area:" with a dropdown menu showing "SMART - SMART Conservation Area", "User Name:" with the text "smart" entered, and "Password:" with five black dots. To the right of the password field is a link that says "Advanced...". At the bottom of the form are two buttons: a grey "Exit" button and a red "Login" button.

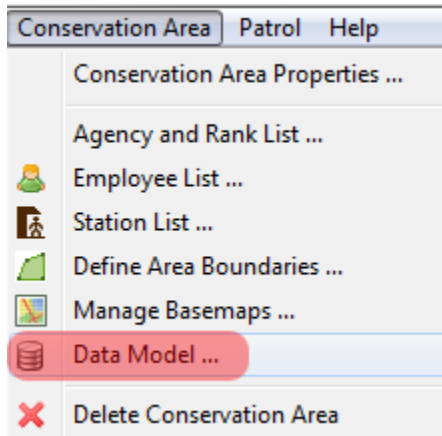
- Enter in the log in information:
 - Conservation Area: **SMART - SMART Conservation Area**
 - User Name: **smart**
 - Password: **smart**
- Click **Login**

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 IUCN¹ data model;
- Copying from an existing Conservation Area that has been previously initialized by that instance of SMART; or,
- Importing a custom data model (if a previously exported XML data model file exists).

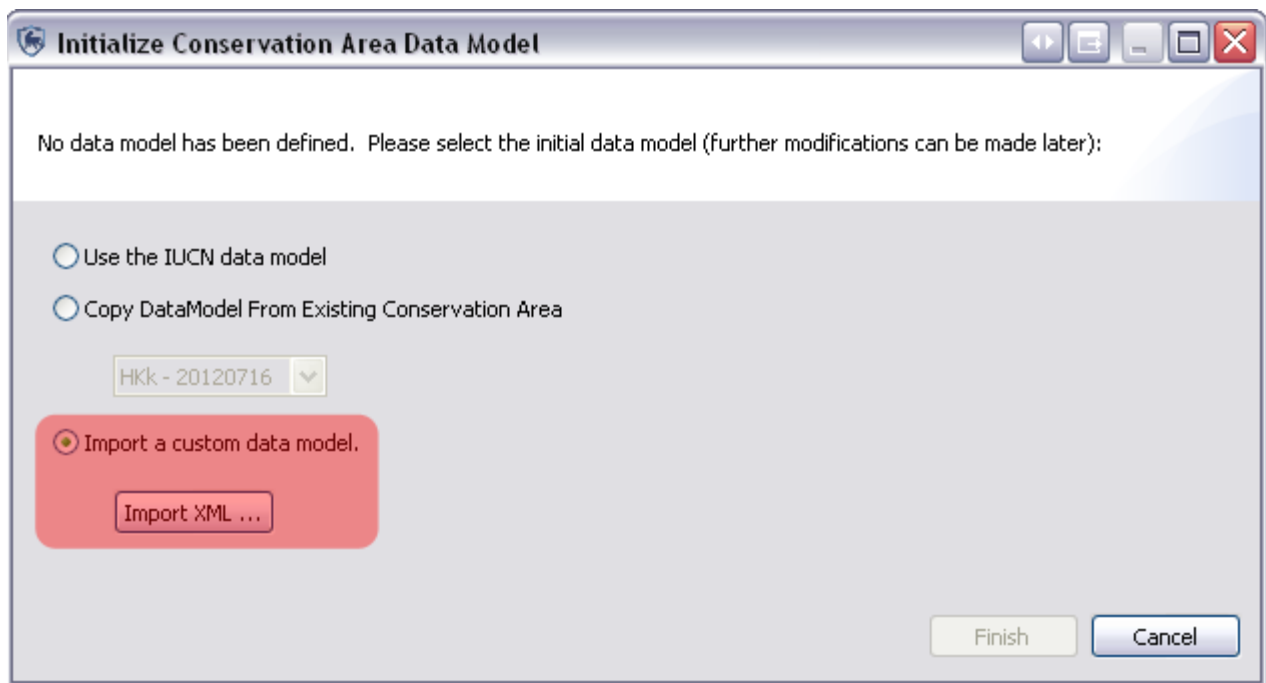


In the menu bar ...

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

For this exercise you will import a custom data model.

¹ *International Union for Conservation of Nature*



- Select **Import a custom data model**
- Click **Import XML ...**
- In the **Module 1** folder 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 8 - Data Model Management.

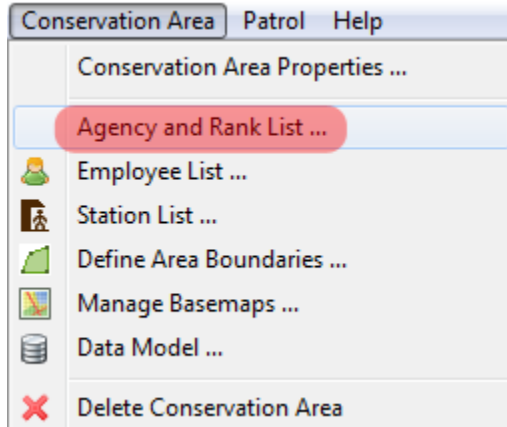
The Conservation Area currently has a name and descriptors, a primary administrator and a data model but more work is needed to prepare it before patrol information can be entered.

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.



In the menu bar ...

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

Agency and Rank List

Agency and Rank for Employees.

Language:

English (United States) (en_US)

Agencies:

Agency

Add Agency

Delete Agency

Ranks:

Rank

Add Rank

Delete Rank

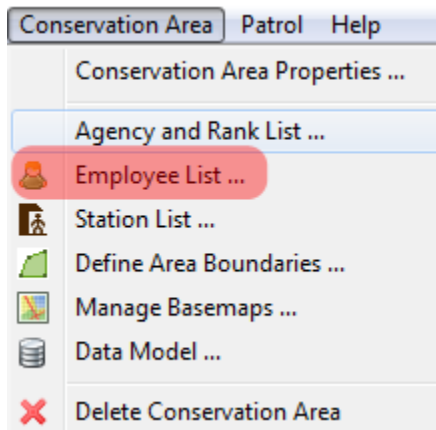
Save

Close

- Click **Add Agency**
- Click over **New Agency**
- Type in **National Park Department**
- Click **Add Rank**
- Click over **New Rank**
- Type in **Warden**
- Click **Add Rank** two more times
- Change **New Rank** entries to **Ranger** and **Manager**
- Add a second **Agency** of **Forest Conservation International**
 - Add three new Ranks
 - **Forester**
 - **Administrator**
 - **Researcher**
- Click **Save**
- Click **Close**
-

Note: All entries can be edited by clicking on the name and retyping in new values. Agencies and Ranks can be deleted by clicking the Delete Agency or Delete Rank button.

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.

Create Employee

Id: system-generated

Given Name(s): *

Family Name(s): *

Conservation Area Start: Wednesday, July 25, 2012

Birth Date: Sunday, January 01, 1950

Gender: ☒ Male ☐ Female

Agency:

Rank:

Smart User

☒ Smart User

Smart User Name: *

Smart Password: *

Re-Type Password:

Smart User Level: DATA_ENTRY

Save Cancel

- Click the **Smart User** box
- Under the Smart User section enter the following information:
 - Smart User Name: **dataentry**
 - Smart Password: **dataentry**
 - Re-Type Password: **dataentry**
 - Choose Smart User Level: **DATA_ENTRY**
 - Click **Save**
- Repeat the process and add three (3) more employees using the Smart User Level as the names and passwords. Create accounts for the following user types:
 - **ANALYST**
 - **MANAGER**
 - **ADMIN**

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),RANK,AGENCY

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.

[illegible]

- Click **Import ...**

Import Employees

Import employee data from csv file.

CSV File: Browse

☒ Includes Header Line (skip the first line when importing)

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

Import Cancel

- 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**

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

Employee List

Manage the employees.

Enter search terms

A	Id	Family Name(s)	Given Name(s)	Gender	Birth Date	Agency	Rank	Smart User Name	Smart User Level
Y	195000015	smart	smart	M	Jan 1, 1950			smart	ADMIN
Y	SMART1	Owens	Dana	F	Mar 18, 1970	National Park Department	Warden		
Y	SMART2	Cohen	Ellen	F	Sep 19, 1941	Forest Conservation International	Forester		
Y	SMART3	Barrett	Roger	M	Jan 6, 1946	National Park Department	Ranger		
Y	SMART4	Hewson	Paul	M	May 10, 1960	Forest Conservation International	Researcher		
Y	SMART5	Gordon	Rawlston	M	Jan 17, 1966	National Park Department	Ranger		
Y	SMART6	Hendrix	Johnny	M	Nov 27, 1942	Forest Conservation International	Administrator		
Y	SMART7	Sarkisian	Cherilyn	F	May 20, 1946	National Park Department	Ranger		
Y	SMART8	Sumner	Gordon	M	Oct 2, 1951	Forest Conservation International	Forester		
Y	SMART9	Gillis	John	M	Jul 9, 1975	National Park Department	Manager		
Y	SMART10	Zimmerman	Robert	M	May 24, 1941	Forest Conservation International	Researcher		
Y	195000010	dataentry	dataentry	M	Jan 1, 1950			dataentry	DATA_ENTRY
Y	195000011	analyst	analyst	M	Jan 1, 1950			analyst	ANALYST
Y	195000012	manager	manager	M	Jan 1, 1950			manager	MANAGER
Y	195000013	admin	admin	M	Jan 1, 1950			admin	ADMIN

☐ Include Inactive Employees

Edit Create New ... Import ...

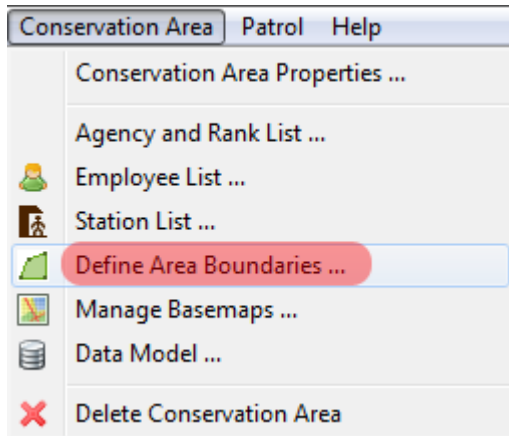
Save Close

- Click **Save**
- Click **Close**

Defining Conservation Area Boundaries

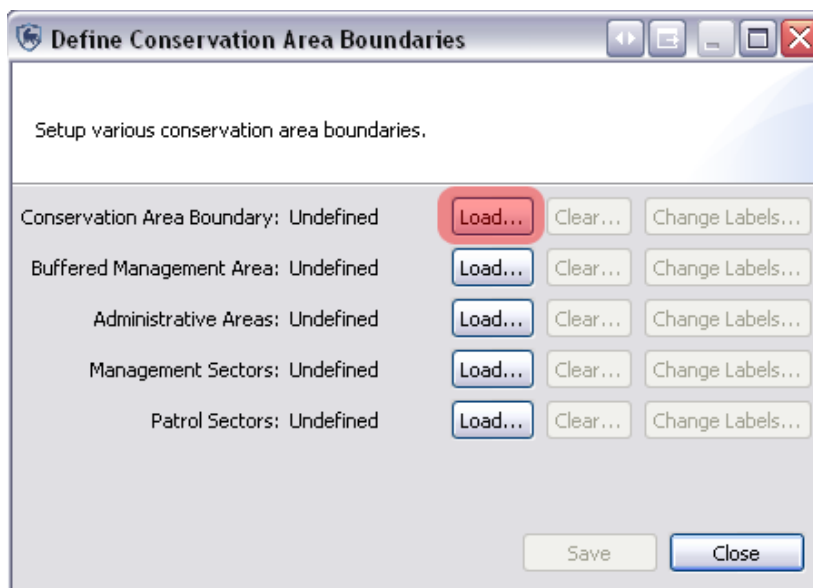
The final step in initializing a Conservation Area is to define the spatial boundaries. This is accomplished by uploading ESRI Shapefiles for the five (5) administrative divisions.

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

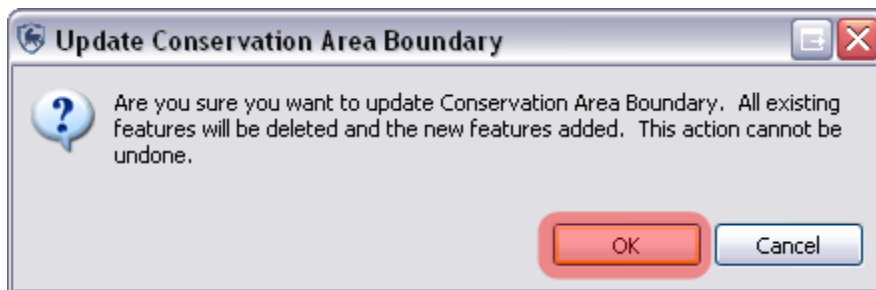


In the menu bar ...

- Click **Conservation Area ... Define Area Boundaries**



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



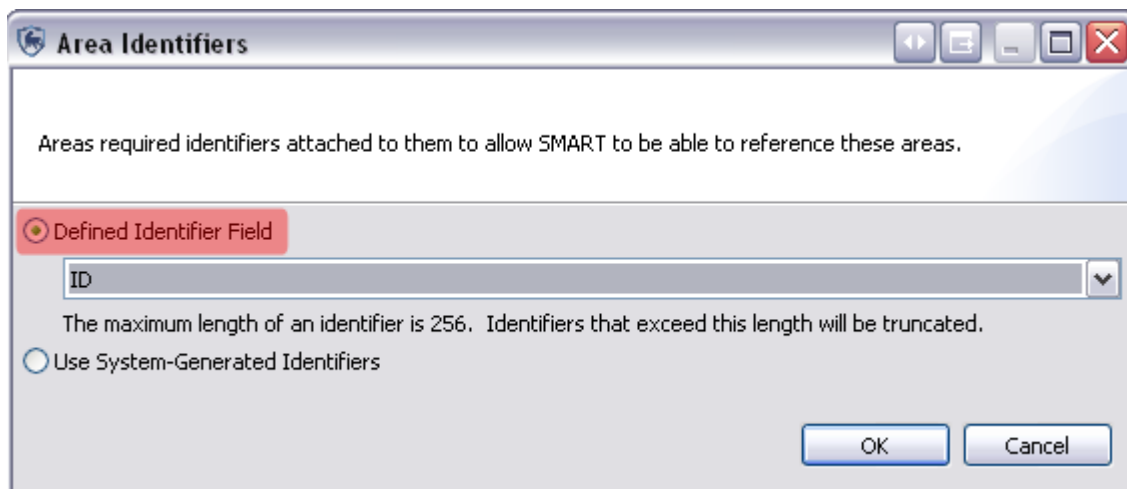
Note: For the initial load of boundaries there are no features that will be overwritten. On future uses of this feature, the previously loaded boundaries will be replaced with the new selections.

- Click **OK**

Name	Date modified	Type	Size
AA.shp	7/16/2012 3:04 PM	SHP File	54 KB
CA.shp	7/16/2012 4:48 PM	SHP File	22 KB
CA_BUFF.shp	7/16/2012 2:58 PM	SHP File	11 KB
MS.shp	7/16/2012 4:03 PM	SHP File	12 KB
PS.shp	7/16/2012 3:15 PM	SHP File	14 KB

- 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.



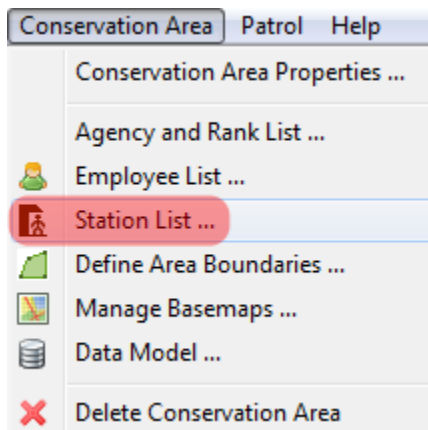
- Select **Defined Identifier Field**
- Choose **ID**
- Click **OK**

- Repeat the process for the remaining four boundary types using **Defined Identifier Field = ID**
 - Buffered Management Area = **CA_BUFF.shp**
 - Administrative Areas = **AA.shp**
 - Management Sectors = **MS.shp**
 - Patrol Sectors = **PS.shp**
- Press **Close**

Note: If no fields exist it is recommended to create meaningful identifiers or select the option “Use System-Generated Identifiers”

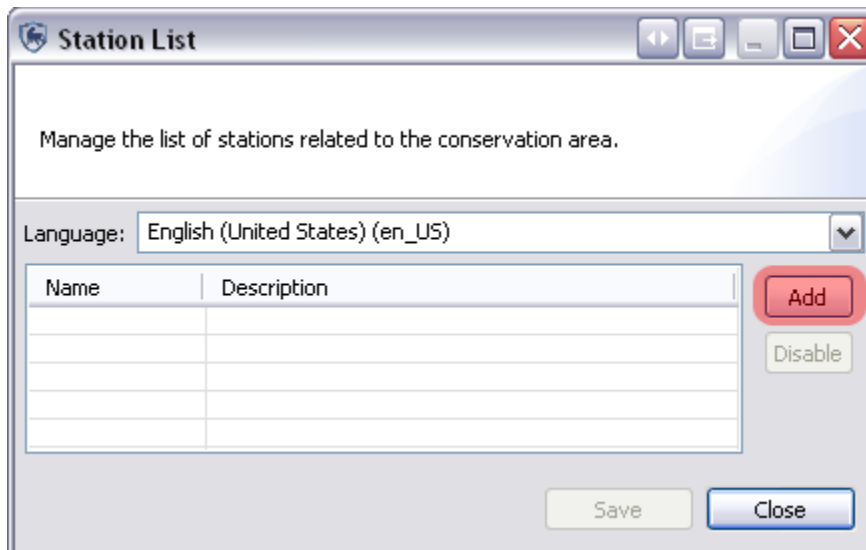
Entering Stations

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**
- Change **New Station** to **HQ**
- Click in the Description cell for **HQ**
- Type in **Headquarters**
- Add **three(3)** more Stations using the same process:
- **Name - Description**
 - **Patrol Station 1 - Primary Patrol Station**
 - **Patrol Station 2 - Secondary Patrol Station**
 - **Marine 1 - Station For Marine Patrols**
- Click **Save**
- Click **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 Marine. 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 Marine.

Manage the patrol types and patrol transport types for the conservation area.

Language: English (United States) (en_US) ▼

Patrol Types:

Active	Patrol Type
Active	Air
Active	Ground
Active	Marine

Disable

Transportation Options:

Active	Transport Type

Add

Enable

Save Close

- Click **Patrol ... Patrol Types**
- Select Patrol Type **Air**
- Click the **Add** button
- Select the **New Transport Type**.
- Type in **Airplane**.
- Click the **Add** button to add another entry to Air Patrols
- Type in **Helicopter**
- Select Patrol Type **Ground** in the top list
- Click **Add**
- Select the **New Transport Type**
- Enter **Foot**
- Click **Add** to add another entry to Ground Patrols
- Select the **New Transport Type**
- Enter **Truck**
- Click **Add** to add a third entry to Ground Patrols
- Enter **Motorbike**
- For the Patrol Type of Marine add two Transportation Options
 - Boat
 - Canoe
- Click **Save**
- Click **Close**

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.

Patrol Mandate

Manage the list of mandates associated with a patrol.

Language: English (United States) (en_US) ▼

Mandate

Add

Enable

Save

Close

- Click **Patrol ... Patrol Mandates**
- Click the **Add** button
- Select the **New Patrol Mandate.**
- Type in **Poaching Control**
- Add **two(2)** more Mandates
 - **Animal Tracking**
 - **Law Enforcement**
- 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.

Manage the list of patrol teams.

Language: English (United States) (en_US) ▼

Team	Mandate	Description

Add

Enable

Save Close

To create a new patrol team:

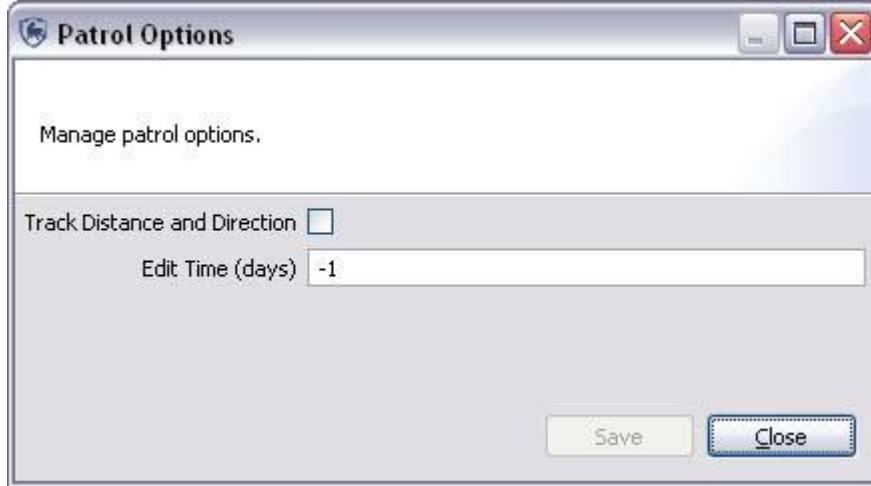
- Click **Patrol ... Patrol Teams**
- Click **Add**
- Click the **New Team** entry and type in **Team 1**
- Select the Mandate **Law Enforcement**
- Enter in the Description of **Primary Law Enforcement Team**
- Click **Add**
- Click the New Team entry and enter **Team 2**
- Select the Mandate **Animal Tracking**
- Enter in the Description of **Tracking Team**
- Click **Add**
- Click the New Team entry and enter **Team 3**
- Select the Mandate **Poaching Control**
- Enter in the Description of **Poaching and Illegal Activity Team**
- 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.



- This menu is located under **Patrol ... Patrol Options**
- Click **Close**

<End of Module 1 - Configuring a Conservation Area>

Module 2 – 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.

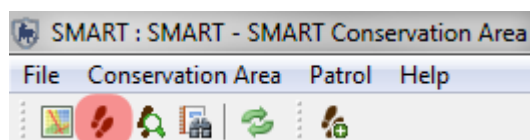
You will be working to understand the following features in this module:

- Creating a Patrol
- Loading Waypoints
- Loading or Setting Tracks
- Entering Observations
- Viewing a Patrol Map
- Making Manual Corrections
- Multi-leg Patrols
- Exporting and Importing Patrols
- Patrol View Filters
- Fixed Patrols

Detailed Steps:

Patrol Perspective

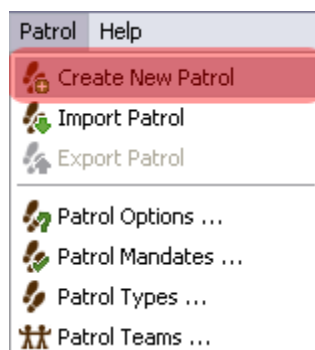
The SMART application allows the user to switch between perspectives. In this module you will explore options within the Patrol Perspective.



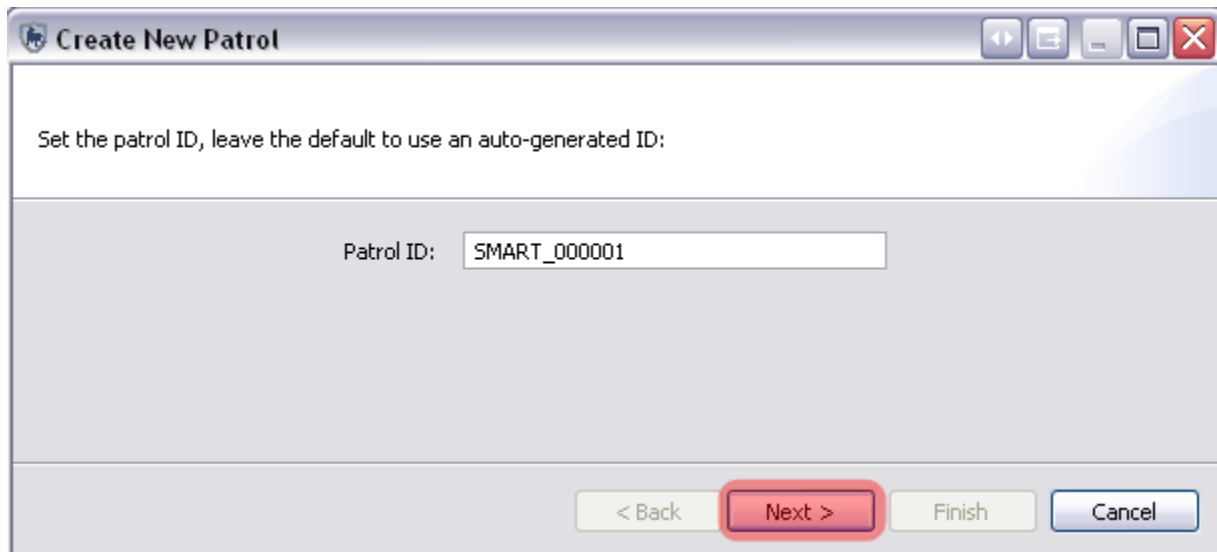
- Click the **Patrol Perspective Icon**, highlighted above in red

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**



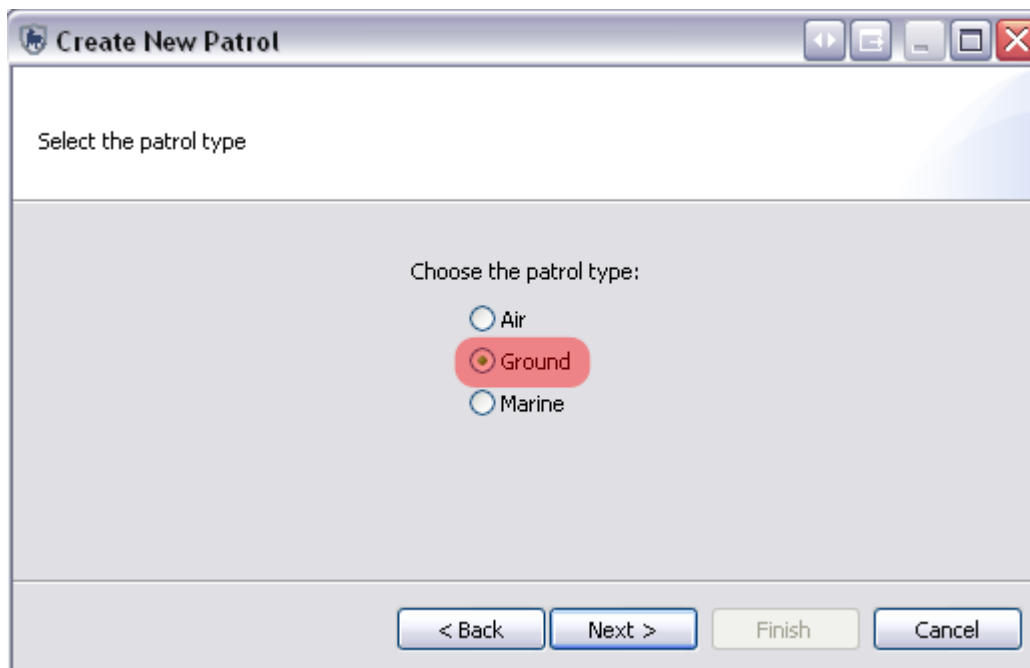
The Patrol ID will be automatically populated with unique values unless the user enters a new ID manually.



The screenshot shows a window titled "Create New Patrol". Inside, there is a header bar with a small icon and the title. Below the header, the text "Set the patrol ID, leave the default to use an auto-generated ID:" is displayed. A text input field labeled "Patrol ID:" contains the value "SMART_000001". At the bottom of the window, there are four buttons: "< Back", "Next >" (highlighted with a red border), "Finish", and "Cancel".

- Click **Next**

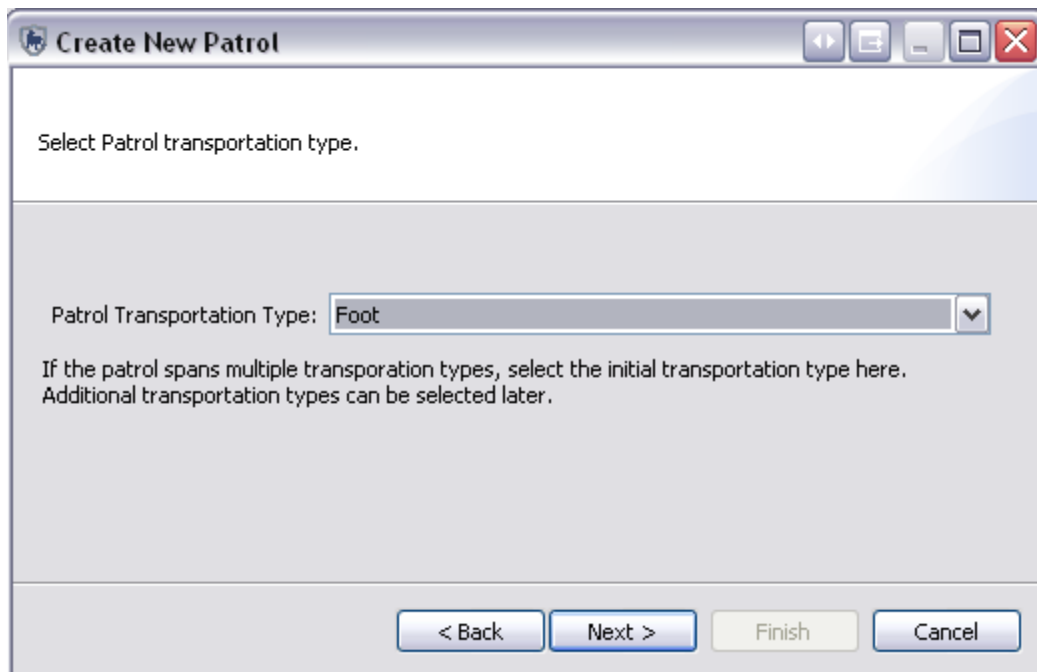
The default Patrol Types of Air, Ground and Marine are listed at this stage.



The screenshot shows the same "Create New Patrol" window, but now it prompts the user to "Select the patrol type". The text "Choose the patrol type:" is followed by three radio button options: "Air", "Ground" (which is selected and highlighted with a red circle), and "Marine". At the bottom, the same four buttons are present: "< Back", "Next >" (highlighted with a blue border), "Finish", and "Cancel".

- Select **Ground**
- Click **Next**

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



The 'Create New Patrol' dialog box has a title bar with a shield icon and standard window controls. The main area contains the instruction 'Select Patrol transportation type.' followed by a dropdown menu labeled 'Patrol Transportation Type:' with 'Foot' selected. Below the dropdown is a note: 'If the patrol spans multiple transportation types, select the initial transportation type here. Additional transportation types can be selected later.' The bottom of the dialog features four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Select Patrol transportation type.

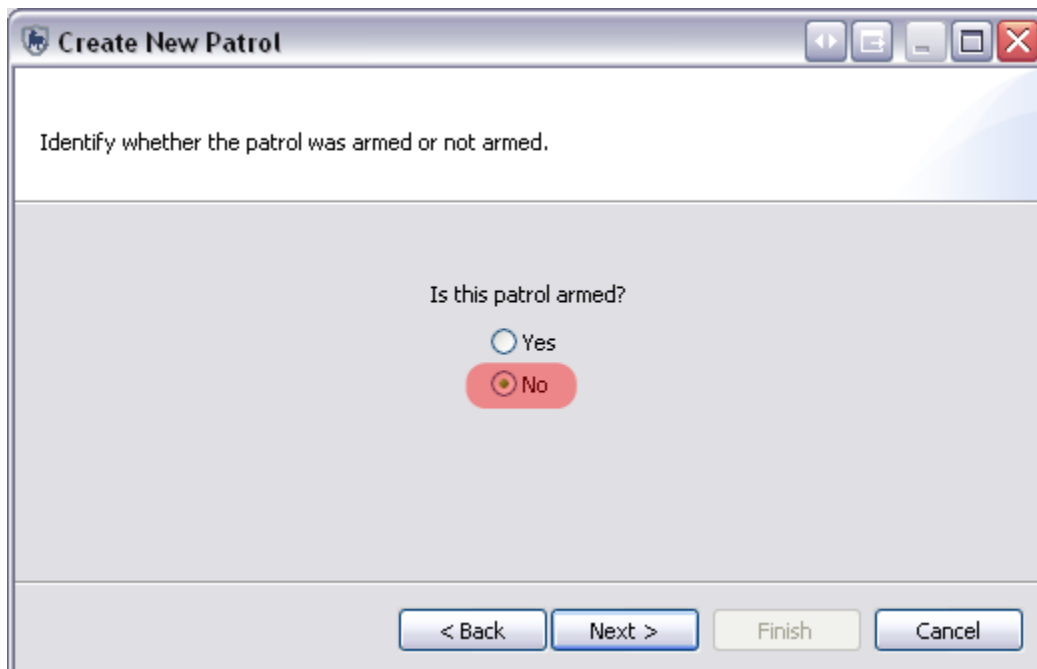
Patrol Transportation Type: Foot

If the patrol spans multiple transportation types, select the initial transportation type here. Additional transportation types can be selected later.

< Back Next > Finish Cancel

- Select **Foot**
- Click **Next**

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



The 'Create New Patrol' dialog box has a title bar with a shield icon and standard window controls. The main area contains the instruction 'Identify whether the patrol was armed or not armed.' followed by the question 'Is this patrol armed?'. Below the question are two radio buttons: 'Yes' and 'No'. The 'No' button is selected and highlighted with a red background. The bottom of the dialog features four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Identify whether the patrol was armed or not armed.

Is this patrol armed?

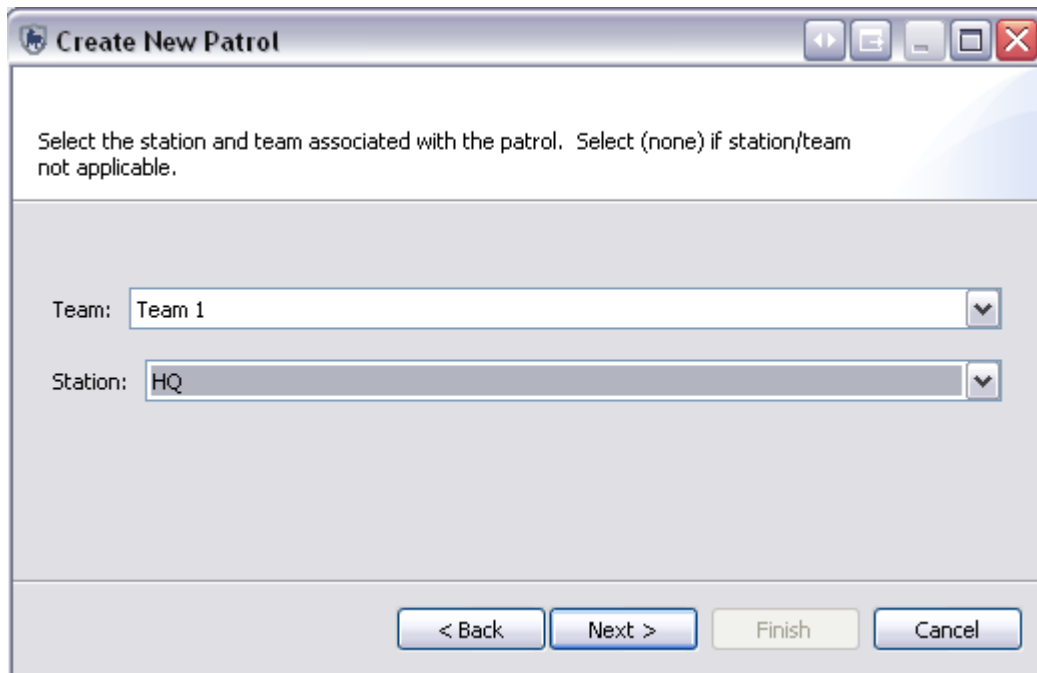
☐ Yes

☒ No

< Back Next > Finish Cancel

- Select **No**
- Click **Next**

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



The 'Create New Patrol' dialog box features a title bar with a small icon and standard window controls. Below the title bar, a light blue header contains the instruction: 'Select the station and team associated with the patrol. Select (none) if station/team not applicable.' The main area is a light gray panel with two dropdown menus. The first is labeled 'Team:' and shows 'Team 1'. The second is labeled 'Station:' and shows 'HQ'. At the bottom, there are four buttons: '< Back' (disabled), 'Next >' (active), 'Finish' (disabled), and 'Cancel'.

Select:

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



This second 'Create New Patrol' dialog box is similar to the first but with a different instruction: 'Select the patrol mandate'. It features a single dropdown menu labeled 'Patrol Mandate:' which is set to 'Law Enforcement'. The bottom buttons are the same: '< Back' (disabled), 'Next >' (active), 'Finish' (disabled), and 'Cancel'.

Select:

- Patrol Mandate:: **Law Enforcement**
- Click **Next**

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



The screenshot shows a software window titled "Create New Patrol". It has a standard Windows-style title bar with minimize, maximize, and close buttons. The main content area is divided into two sections. The top section is labeled "Enter the patrol objective." and is currently empty. The bottom section is labeled "Patrol Objective:" and contains a text box with the text "Responding to reports of illegal activities." and a vertical scrollbar. At the bottom of the window, there are four buttons: "< Back", "Next >", "Finish", and "Cancel".

- 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.



The screenshot shows a window titled "Create New Patrol" with standard Windows window controls. The main area has a header that says "Enter any comments associated with the patrol." Below this is a section labeled "Patrol Comments:" containing a text area with the text "Found evidence : people encountered." At the bottom of the window are four buttons: "< Back", "Next >", "Finish", and "Cancel".

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

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



The screenshot shows the same "Create New Patrol" window, but at a different step. The header now says "Select the start and end dates for the patrol." Below this are two date selection fields. The first field is labeled "Patrol Start Date:" and shows "Sunday , September 02, 2012" with a dropdown arrow. The second field is labeled "Patrol End Date:" and also shows "Sunday , September 02, 2012" with a dropdown arrow. At the bottom are the same four buttons: "< Back", "Next >", "Finish", and "Cancel".

- Enter in the date of **Sunday, September 02, 2012** for both the Start and End date.

- Click **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.

Create New Patrol

At least one employee must be selected

Select members that participated in the patrol:

All Employees:

- smart smart [195000015]
- Dana Owens [SMART1]
- Ellen Cohen [SMART2]
- Roger Barrett [SMART3]
- Paul Hewson [SMART4]
- Rawlston Gordon [SMART5]
- Johnny Hendrix [SMART6]
- Cherilyn Sarkisian [SMART7]
- Gordon Sumner [SMART8]
- John Gillis [SMART9]
- Robert Zimmerman [SMART10]

Selected Employees:

Add ->

<- Remove

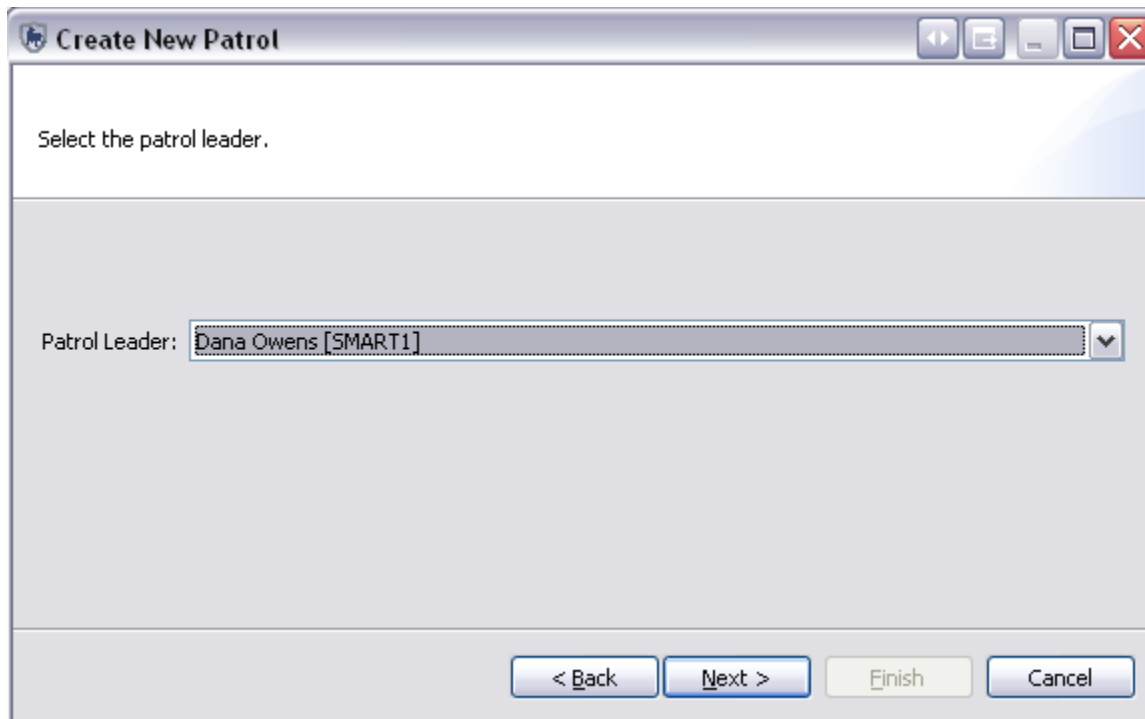
< Back Next > Finish Cancel

- Select **Dana Owens**, **Roger Barrett** and **Johnny Hendrix**
- Click **Add ->**

Once the three names appear in the Selected Employees window

- Click **Next**

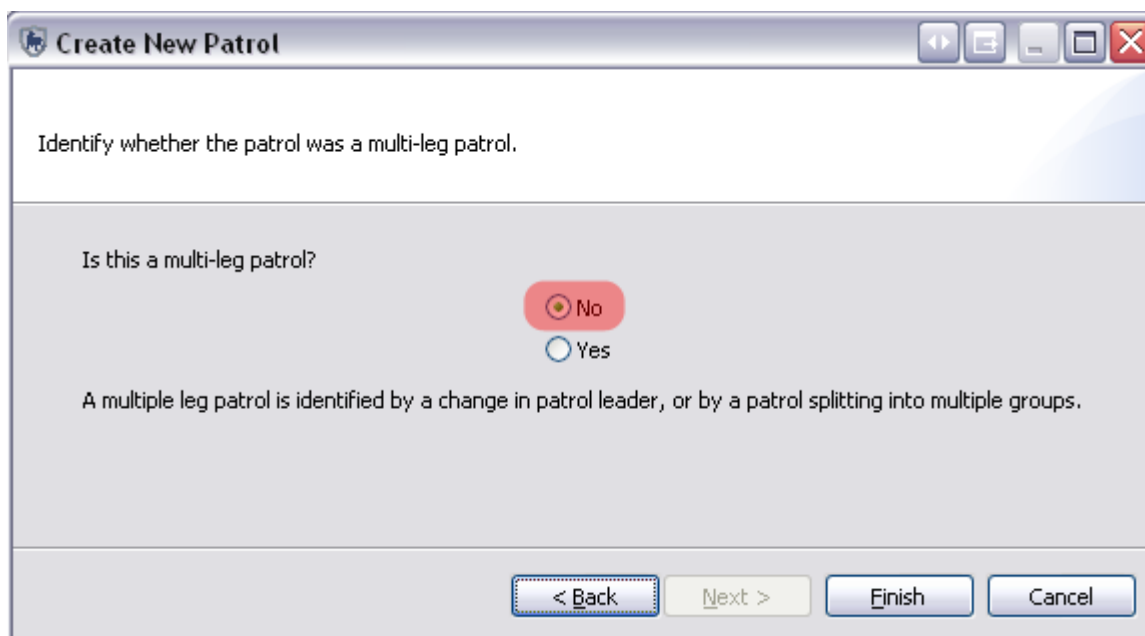
Each patrol must be assigned a leader. SMART will populate the pulldown list with the three previously selected names.



The 'Create New Patrol' dialog box has a title bar with a horse icon and standard window controls. The main area contains the instruction 'Select the patrol leader.' Below this is a text label 'Patrol Leader:' followed by a dropdown menu. The dropdown menu is open, showing 'Dana Owens [SMART1]' as the selected option. At the bottom, there are four buttons: '< Back' (disabled), 'Next >' (active), 'Finish' (disabled), and 'Cancel'.

- Select **Dana Owens**
- 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.



The 'Create New Patrol' dialog box has a title bar with a horse icon and standard window controls. The main area contains the instruction 'Identify whether the patrol was a multi-leg patrol.' Below this is the question 'Is this a multi-leg patrol?' followed by two radio buttons: 'No' (selected) and 'Yes'. Below the radio buttons is a text box containing the explanation: 'A multiple leg patrol is identified by a change in patrol leader, or by a patrol splitting into multiple groups.' At the bottom, there are four buttons: '< Back' (disabled), 'Next >' (disabled), 'Finish' (active), and 'Cancel'.

- 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.

Patrol List View

SMART_000001 [9/2/12 - 9/2/12]

Patrol SMART_000001

SMART_000001

Patrol Information

Patrol Type: Ground [edit](#)

Transportation Type: Foot [edit](#)

Armed?: ☐ [edit](#)

Mandate: Law Enforcement [edit](#)

Team: Team 1 [edit](#)

Station: HQ [edit](#)

Members:

- Roger Barrett [SMART3]
- Johnny Hendrix [SMART6]
- [Leader] Dana Owens [SMART1]

[edit](#)

Patrol ID: SMART_000001 [edit](#)

Objective: Responding to reports of illegal activities. [edit](#)

Comment: Found evidence but no people encountered. [edit](#)

Patrol Data

Start Date: September 2, 2012 End Date: September 2, 2012 [edit](#)

Day	Start Time	End Time	Distance	Hours
Sep 2, 2012 Sun	12:00:00 AM	11:59:59 PM	0	24.00

Summary **Sep 2, 2012** Map

Layers

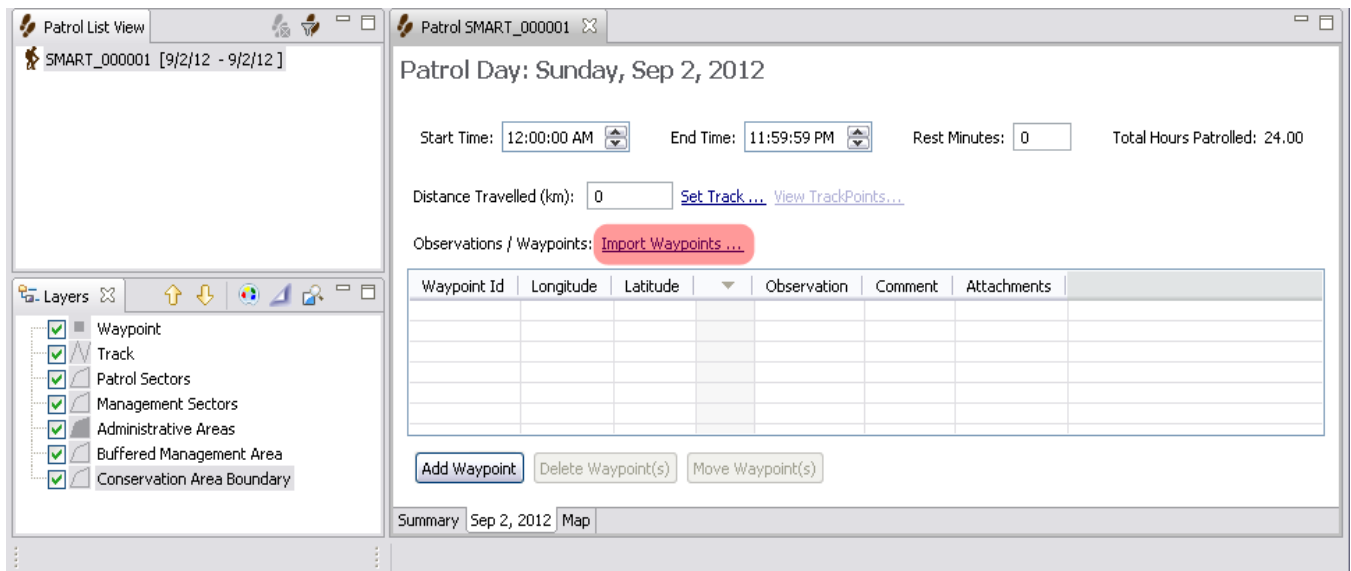
- ☒ Waypoint
- ☒ Track
- ☒ Patrol Sectors
- ☒ Management Sectors
- ☒ Administrative Areas
- ☒ Buffered Management Area
- ☒ Conservation Area Boundary

- Click the tab **Sep 2, 2012**

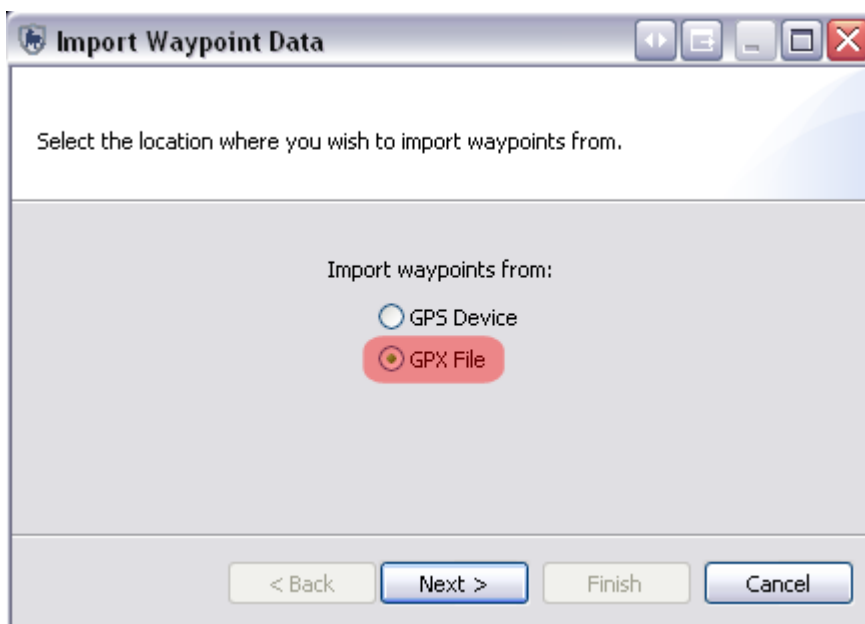
Patrol Waypoints

Waypoints can be entered into SMART in three distinct ways:

- Direct import from a GPS device;
- Import of a GPX data transfer file; or
- Manually entered.



- Click **Import Waypoints ...**



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

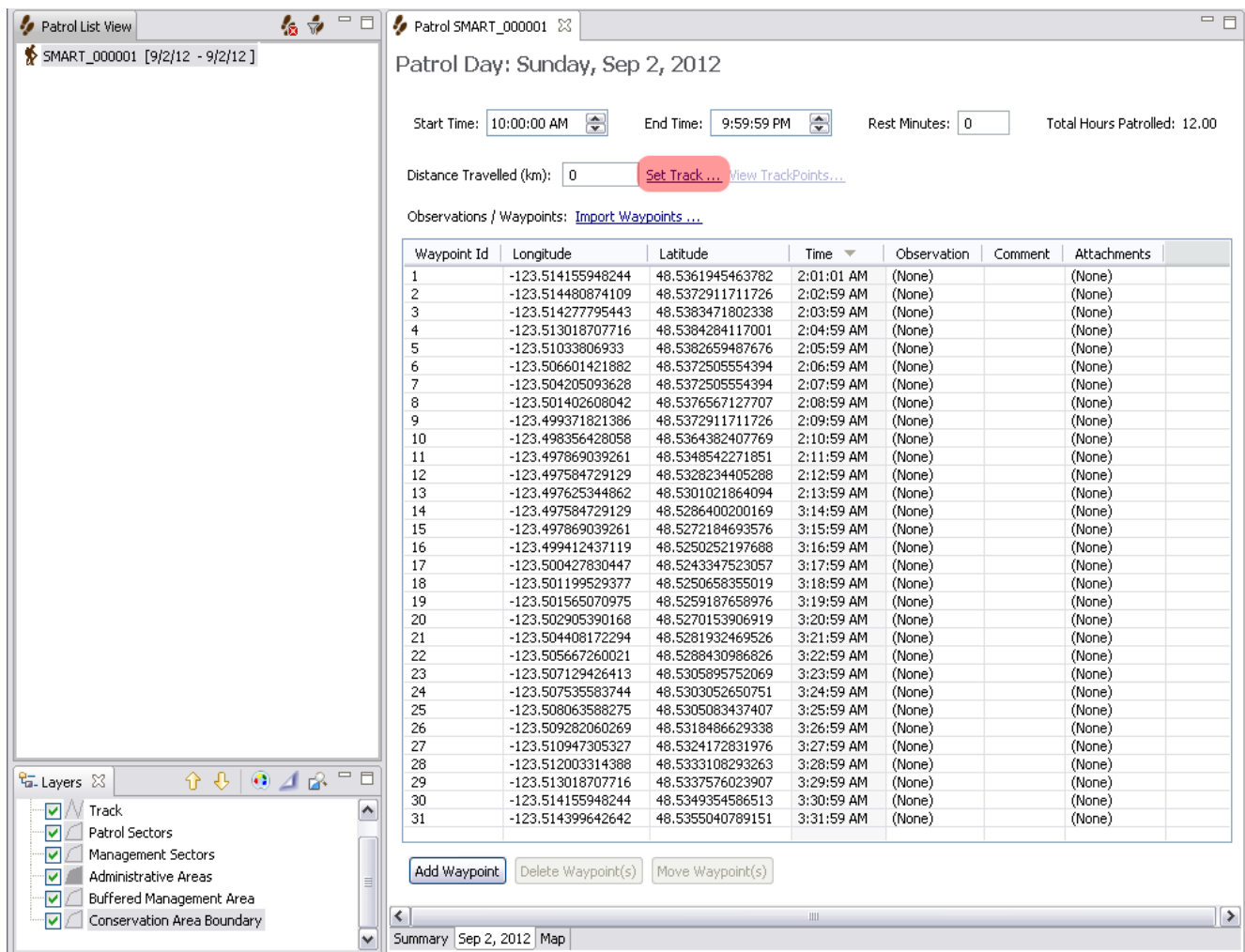
When importing GPX files, you have three options for how to associate the waypoints with a particular date:

- Import All (and assign to correct day)
 - for multi-day patrols but can also be used for single day patrols
- Import Only waypoints for that date tab
 - for extracting out a single day and ignoring the other dates associated with that GPX file
- Select which waypoints to import for that date tab
 - a manual method where you will select and assign waypoints to a particular date



- Select **Import All (and assign to correct day)**
- Browse to the folder Module 2 select **WPT_20120902.GPX**
- Click **OK**
- 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

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.

Importing GPS Tracks

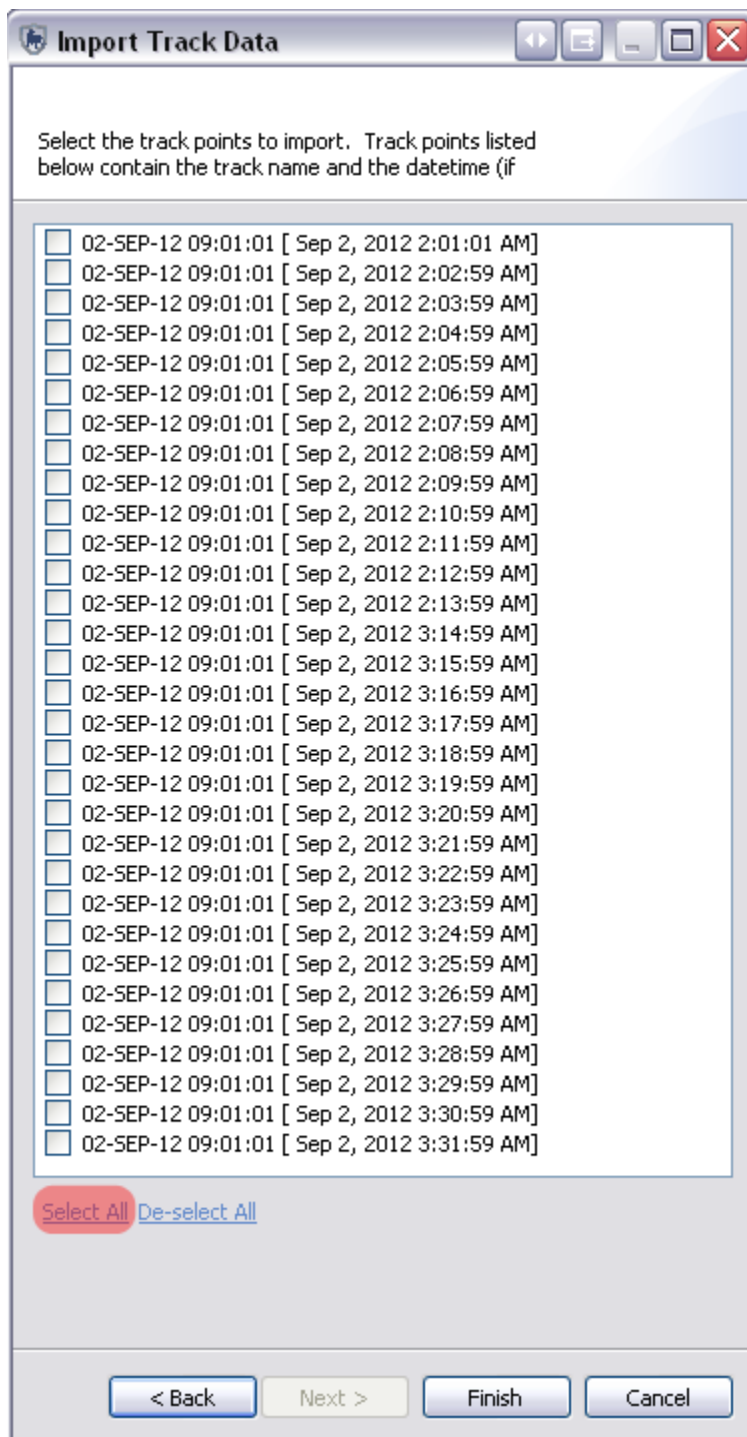
- Click **Set Track ...** (see above screenshot for location)



- Select **GPX File**
- Click **Next**
- Browse to the **Module 2** select **TRK_20120902.gpx**
- Click **OK**
- Choose **Select which tracks to import for Sep 2, 2012**
- Click **Next**

*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.*

You will see the available Track information. If multiple dates are present you will need to select the appropriate dates. For this example you will select all of them.



- Click **Select All**
- Click **Finish**
- Click **OK**

Patrol SMART_000001

Patrol Day: Sunday, Sep 2, 2012

Start Time: 10:00:00 AM End Time: 9:59:59 PM Rest Minutes: 0 Total Hours Patrolled: 12.00

Distance Travelled (km): 4.61 [Set Track...](#) [View TrackPoints...](#)

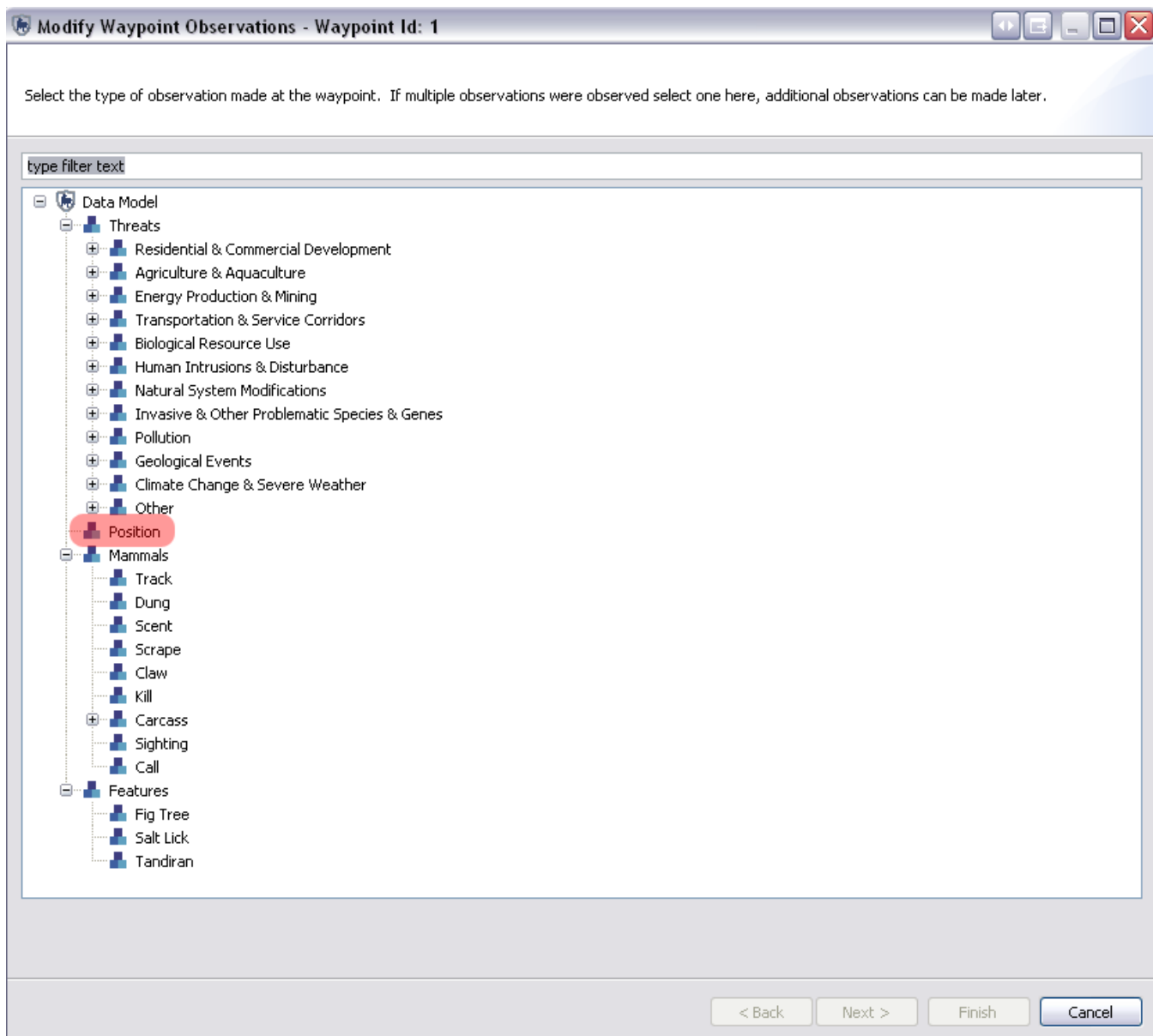
Entering Observations

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.

Observations / Waypoints: [Import Waypoints...](#)

Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments
1	-123.514155948244	48.5361945463782	2:01:01 AM	(None)		(None)
2	-123.514480874109	48.5372911711726	2:02:59 AM	(None)		(None)
3	-123.514277795443	48.5383471802338	2:03:59 AM	(None)		(None)
4	-123.513018707716	48.5384284117001	2:04:59 AM	(None)		(None)
5	-123.51033806933	48.5382659487676	2:05:59 AM	(None)		(None)

- 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 will now start populating the waypoints in this first patrol

- Click **Position**
- Click **Next**
- In the Position Type cell select **Start**
- Click **Next**
- Click **Finish**

For Waypoint ID 1 you will see Position in the Observation field. Now you will move on to populating the remaining waypoints.

Waypoint 2

- Double-Click in the Observation for Waypoint ID 2 to open the data model
- Select the **Sighting** under Mammals
- Click **Next**
- Double-click in the Species window then select the ... button to open the dialog
- Type in **Elephant** into the *type filter text* cell
- Select **African Elephant**
- Click **OK**
- Enter in the number sightings
 - **Number of Adult Males Seen = 4**
 - **Number of Animals Seen = 10**
 - **Number of Adult Females Seen = 4**
 - **Number of Young Seen = 2**
- Click **Next**
- Click **Finish**

Waypoint 3

- Double-Click the **Observation cell** for Waypoint 3
- Click the **square button** (highlighted above) on the right to bring up the observation data model
- Click **Position**
- Click **Next**
- In the Position Type cell select **Position**
- Click **Next**
- Click **Finish**

Waypoint 4

Modify Waypoint Observations - Waypoint Id: 4

Select the type of observation made at the waypoint. If multiple observations were observed select one here,

type filter text

- Data Model
 - Threats
 - Agriculture & Aquaculture
 - Energy Production & Mining
 - Transportation & Service Corridors
 - Biological Resource Use
 - Hunting & Collecting Terrestrial Animals
 - People Seen
 - People Confronted
 - Weapons Seen
 - Weapons Confiscated
 - Weapons Destroyed
 - Transportation Seen
 - Transportation Confiscated
 - Camp**
 - Animals Seen
 - Animals Confiscated
 - Animals Destroyed
 - Gun Shots Heard
 - Poaching Sign
 - Hide
 - Gathering Terrestrial Plants
 - Logging & Wood Harvesting
 - Fishing & Harvesting Aquatic Resources
 - Human Intrusions & Disturbance
 - Natural System Modifications
 - Invasive & Other Problematic Species & Genes
 - Pollution
 - Climate Change & Severe Weather
 - Other
 - Position

< Back **Next >** Finish Cancel

- Under Threats - Biological Resource Use - Hunting and Collecting Terrestrial Animals select **Camp**
- Click **Next**

- Complete the Observation with the following information
 - **Domestic Dogs = Yes**
 - **Stakes to Dry Meat = No**
 - **Camp Capacity = 10**
 - **Camp Seen or Destroyed = Destroyed**
 - **Camp Status = Old Abandoned**
- Click **Next**
- Click **Finish**

Waypoint 5

- Select **Track** under Mammals
- Click **Next**
- Complete the Observation with the following information
 - **Species = Sumatran Tiger**
 - **Track Type = Front**
 - **Width of Foot mm = 130**
- Click **Next**
- Click **Finish**

Waypoints 6 - 9

- Enter the values of **Position - Position** for these four (4) waypoints

Waypoint 10

SMART has the ability to record multiple observations at a single waypoint.

For this waypoint (10), you will learn how to enter multiple observations.

- Under Threats - Biological Resource Use - Hunting and Collecting Terrestrial Animals select **People Confronted**
- Click **Next**
- Complete the Observation with the following information
 - **Domestic Dogs = No**
 - **Number of People Confronted = 2**
 - **People Armed = Armed**
 - **Action Taken = Arrested**
 - **Type of Local People Confronted = Local People**
- Click **Next**
- To enter additional observations you will now click **Next**
- Under Threats - Biological Resource Use - Hunting and Collecting Terrestrial Animals select **Weapons Confiscated**
- Click **Next**
- Complete the Observation with the following information
 - **Domestic Dogs = No**
 - **Type of Weapon = Single Action Rifle**
 - **Age of Cartridge = Recently Less than One Week**
 - **Number of Weapons = 2**
 - **Number of Cartridges = 50**
- Click **Next**
- To enter one more observation you will now click **Next**
- Under Threats - Biological Resource Use - Hunting and Collecting Terrestrial Animals - Animals Confiscated select **Dead**
- Click **Next**

- Complete the Observation with the following information
 - **Domestic Dogs = No**
 - **Age of Animal = Adult**
 - **Gender of Animal = Unknown**
 - **Age of Animal Carcass = Fresh**
 - **Species = Southern Red Muntjac**
 - **Number of Animals Dead = 1**
- Click **Next**

Modify Waypoint Observations - Waypoint Id: 10

Review the observation data you have entered. Use the edit button to edit observations. Press 'Next' to enter another observation. 'Finish' if the observations are complete.

Weapons Confiscated - Hunting & Collecting Terrestrial Animals - Biological Resource Use - Threats [Delete](#) [Edit](#)

Domestic Dogs	Age of Cartridge	Number of Cartridges	Number of Weapons Confiscated	Type of Weapon
No	Recently Less Than One Week	50.0	2.0	Single Action Rifle

People Confronted - Hunting & Collecting Terrestrial Animals - Biological Resource Use - Threats [Delete](#) [Edit](#)

Domestic Dogs	Number of People Confronted	Action Taken	People Armed	Type of People Confronted
No	2.0	Arrested	Armed	Local People

Dead - Animals Confiscated - Hunting & Collecting Terrestrial Animals - Biological Resource Use - Threats [Delete](#) [Edit](#)

Domestic Dogs	Age of Animal	Age of Animal Carcass	Gender of Animal	Number of Animals Dead	Species
No	Adult	Fresh	Unknown	1.0	Southern Red Muntjac, ...

< Back Next > **Finish** Cancel

To complete the observations for this waypoint

- Click **Finish**

Waypoints 11 - 13

- Enter the values of **Position - Position** for these three (3) waypoints

Waypoint 14 - 15

- Select **Dung** under Mammals
- Click **Next**
- Complete the Observation with the following information
 - **Species = African Elephant**
 - **Age of Dung = Recent**
- Click **Next**
- Click **Finish**

Waypoint 16

- Select **Track** under Mammals
- Click **Next**
- Complete the Observation with the following information
 - **Species = African Elephant**
 - **Track Type = Hind**
 - **Width of Foot mm = 450**
- Click **Next**
- Click **Finish**

Waypoint 17

- Enter the value of **Position - Rest** for this waypoint

Waypoint 18

- Select **Track** under Mammals
- Click **Next**
- Complete the Observation with the following information
 - **Species = African Elephant**
 - **Track Type = Front**
 - **Width of Foot mm = 450**
- Click **Next**
- Click **Finish**

Waypoint 19

- Enter the value of **Position - Position** for this waypoint

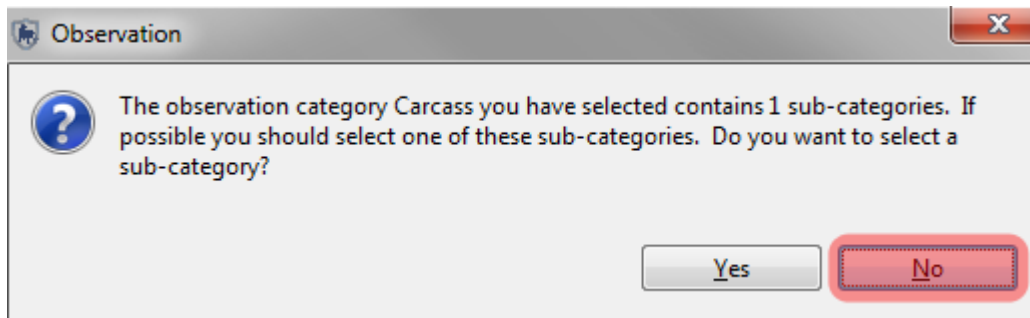
Waypoint 20

- Under Threats - Biological Resource Use - Hunting and Collecting Terrestrial Animals select **Hide**
- Click **Next**
- Complete the Observation with the following information
 - **Domestic Dogs = No**
 - **Hide Status = Recently Abandoned one to four weeks**
 - **Hide Seen or Destroyed = Destroyed**
 - **Number of Ground Hide = 1**
 - **Type of Hide = Ground Hide**

Waypoint 21

- Select **Carcass** under Mammals
- Click **Next**

When selecting Observations from the data model, you have the ability to select any category or sub-category. If sub-categories exist, the following message will appear:



- Click **No**
- Complete the Observation with the following information
 - **Species = African Elephant**
 - **Age of Animal = Adult**
 - **Gender of Animal = Male**
 - **Cause of Death = Poaching**
 - **Type of Weapon = Single Action Rifle**
 - **Age of Animal Carcass = Recent**
- Click **Next**
- Click **Finish**

Waypoints 22-25

- Enter the values of **Position - Position** for these four (4) waypoints

Waypoint 26

- Under Threats - Biological Resource Use - Hunting and Collecting Terrestrial Animals - Animals Confiscated select **Parts**
- Click **Next >**
- Complete the Observation with the following information
 - **Domestic Dogs = No**
 - **Age of Animal = Sub-Adult**
 - **Gender of Animal = Unknown**
 - **Age of Animal Carcass = Fresh**
 - **Species = Eastern Gorilla**
 - **Meat Seized Kg = 85**
 - **Type of Animal Part = Meat**
- Click **Next**
- Click **Finish**

Waypoint 27

- Under Features select **Salt Lick**
- Complete the Observation with the following information
 - **Species = African Elephant**
 - **Salt Lick Location = Land Based**
 - **Old Animal Track Greater Than 2 Months = No**
 - **Number of Wildlife at Saltlick = 6**
 - **Length of Salt Lick Meters = 4**
 - **Salt Lick Abandoned or Dried Out = No**
 - **Width of Salt Lick Meters = 8**
- Click **Next**
- Click **Finish**

Waypoint 28

- Enter the value of **Position - Rest**

Waypoint 29

- Under Threats - Agriculture & Aquaculture - Annual & Perennial Non-Timber Crops select **People Seen**
- Complete the Observation with the following information
 -
 - **Crop Planted = Cassava**
 - **Land Clearing Status = Planted**
 - **Size of Clearing hectares = 4**
 - **Number of People Seen = 6**
 - **Type of People Seen = Unknown**
- Click **Next**
- Click **Finish**

Waypoint 30

- Under Mammals select **Dung**
- Complete the Observation with the following information
 - **Species = African Elephant**
 - **Age of Dung = Recent**
- Click **Next**
- Click **Finish**

Waypoint 31


- Enter the value of **Position - End**

Your list of 31 waypoints should look like the following:

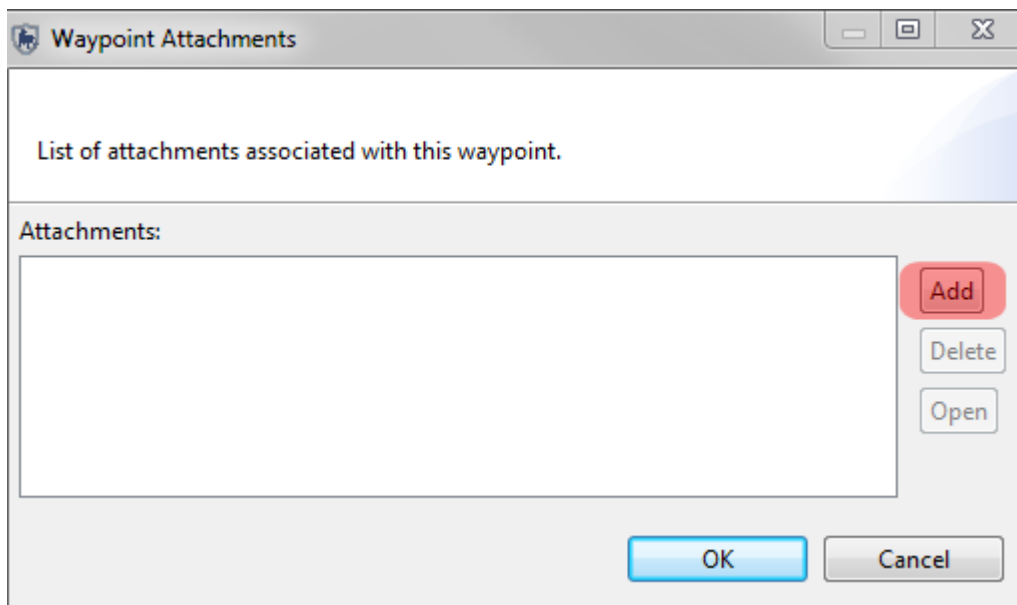
Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments
1	-123.5141...	48.5361...	2:01:01 AM	Position		(None)
2	-123.5144...	48.5372...	2:02:59 AM	Sighting		(None)
3	-123.5142...	48.5383...	2:03:59 AM	Position		(None)
4	-123.5130...	48.5384...	2:04:59 AM	Camp		(None)
5	-123.5103...	48.5382...	2:05:59 AM	Track		(None)
6	-123.5066...	48.5372...	2:06:59 AM	Position		(None)
7	-123.5042...	48.5372...	2:07:59 AM	Position		(None)
8	-123.5014...	48.5376...	2:08:59 AM	Position		(None)
9	-123.4993...	48.5372...	2:09:59 AM	Position		(None)
10	-123.4983...	48.5364...	2:10:59 AM	3 Observations		(None)
11	-123.4978...	48.5348...	2:11:59 AM	Position		(None)
12	-123.4975...	48.5328...	2:12:59 AM	Position		(None)
13	-123.4976...	48.5301...	2:13:59 AM	Position		(None)
14	-123.4975...	48.5286...	3:14:59 AM	Dung		(None)
15	-123.4978...	48.5272...	3:15:59 AM	Dung		(None)
16	-123.4994...	48.5250...	3:16:59 AM	Track		(None)
17	-123.5004...	48.5243...	3:17:59 AM	Position		(None)
18	-123.5011...	48.5250...	3:18:59 AM	Track		(None)
19	-123.5015...	48.5259...	3:19:59 AM	Position		(None)
20	-123.5029...	48.5270...	3:20:59 AM	Hide		(None)
21	-123.5044...	48.5281...	3:21:59 AM	Carcass		(None)
22	-123.5056...	48.5288...	3:22:59 AM	Position		(None)
23	-123.5071...	48.5305...	3:23:59 AM	Position		(None)
24	-123.5075...	48.5303...	3:24:59 AM	Position		(None)
25	-123.5080...	48.5305...	3:25:59 AM	Position		(None)
26	-123.5092...	48.5318...	3:26:59 AM	Parts		(None)
27	-123.5109...	48.5324...	3:27:59 AM	Salt Lick		(None)
28	-123.5120...	48.5333...	3:28:59 AM	Position		(None)
29	-123.5130...	48.5337...	3:29:59 AM	People Seen		(None)
30	-123.5141...	48.5349...	3:30:59 AM	Dung		(None)
31	-123.5143...	48.5355...	3:31:59 AM	Position		(None)

Adding Attachments

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

Observation	Comment	Attachments
Track		(None) 
(None)		(None)

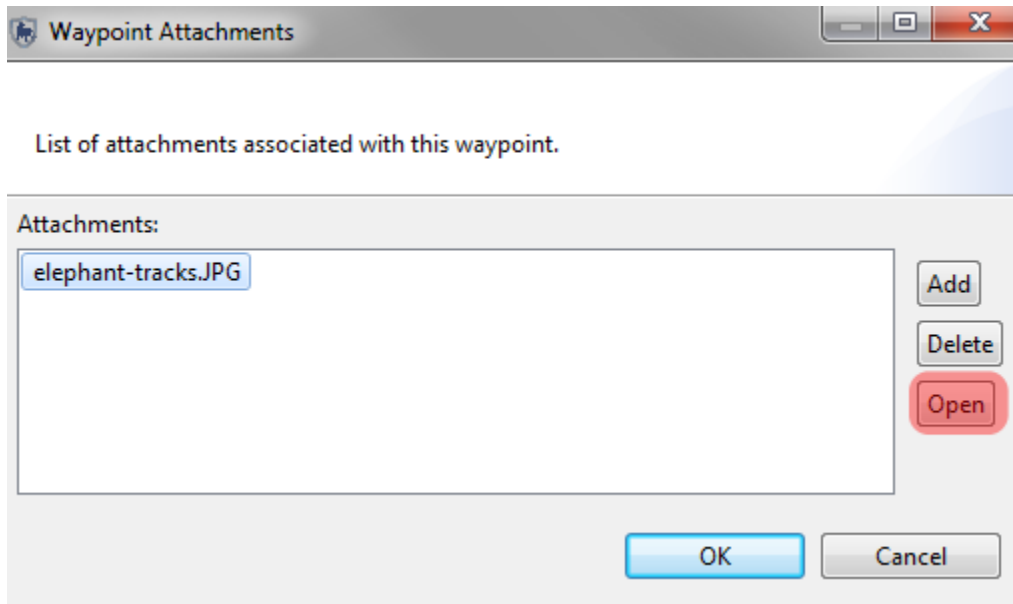
- Double-click the **Attachment** cell for Waypoint ID 16
- Click the square **icon** to launch the file attachment process



- Click **Add**
- Browse to the folder **Module 2**
- Select the file **elephant-tracks.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 **elephant-tracks.jpg**
- Click **Open**

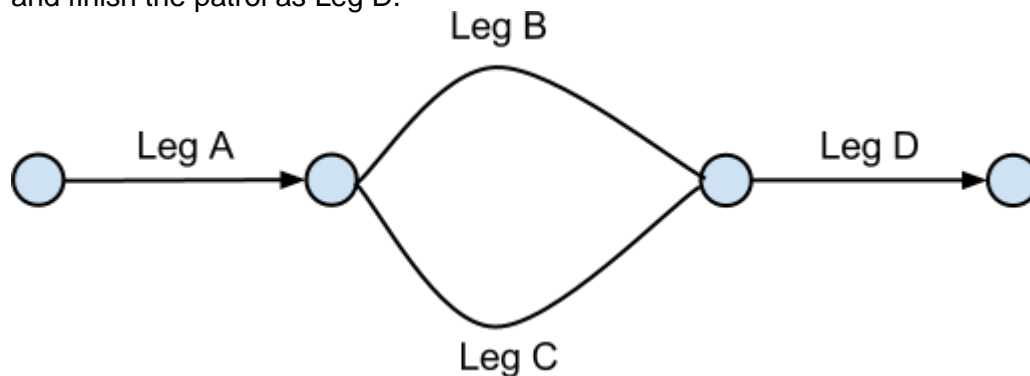


elephant-tracks.jpg

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 example all members are part of Leg A heading east. At the end of Leg A half the team heads north to form Leg B, the other half heads south to form Leg C. Both teams recombine and finish the patrol as Leg D.



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 a the patrol framework in the same until the step in creating the patrol leg divisions.

- From the menu select **Patrol - Create New Patrol**
- Keep the default Patrol ID: **SMART_000002**
- Click **Next**
- Select **Ground**
- Click **Next**
- Select Patrol Transportation Type: **Truck**
- Click **Next**
- Keep the default of **No** for Is this patrol armed?
- Click **Next**
- Select Team: **Team 1**
- Select Station: **Patrol Station 1**
- Click **Next**
- Select Patrol Mandate: **Law Enforcement**
- Click **Next twice** to skip Patrol Mandate and Patrol Comments
- Enter Patrol Start Date: **September 01, 2012**
- Enter Patrol End Date: **September 03, 2012**
- Click **Next**

As with basic patrol you will need to select the patrol members that will take part in this patrol.

Create New Patrol

Select the members who participated in this patrol. Select all members even if the patrol split into multiple groups. At least one member must be selected.

Select members that participated in the patrol:

All Employees:

- smart smart [195000015]
- Rawlston Gordon [SMART5]
- Johnny Hendrix [SMART6]
- Cherilyn Sarkisian [SMART7]
- Gordon Sumner [SMART8]
- John Gillis [SMART9]
- Robert Zimmerman [SMART10]
- dataentry dataentry [195000010]

Selected Employees:

- Dana Owens [SMART1]
- Ellen Cohen [SMART2]
- Roger Barrett [SMART3]
- Paul Hewson [SMART4]

Add ->

<- Remove

< Back Next > Finish Cancel

- Highlight the Selected Employees: **Dana Owens, Ellen Cohen, Roger Barrett, Paul Hewson**
- Click **Add ->**
- Click **Next**

The dialog box is titled "Create New Patrol". It contains the instruction "Select the patrol leader." Below this is a dropdown menu labeled "Patrol Leader:" with "Dana Owens [SMART1]" selected. At the bottom are four buttons: "< Back", "Next >", "Finish", and "Cancel". The "Next >" button is highlighted with a red border.

- Select **Dana Owens** as the Patrol Leader
- Click **Next**

Up until this point the creation of a patrol is exactly the same as a regular patrol. At this step you will begin the process of defining a multi-leg patrol.

The dialog box is titled "Create New Patrol". It contains the instruction "Identify whether the patrol was a multi-leg patrol." Below this is the question "Is this a multi-leg patrol?" with two radio button options: "No" and "Yes". The "Yes" option is selected and highlighted with a red border. Below the options is the text: "A multiple leg patrol is identified by a change in patrol leader, or by a patrol splitting into multiple groups." At the bottom are four buttons: "< Back", "Next >", "Finish", and "Cancel". The "Next >" button is highlighted with a red border.

- Select **Yes**
- Click **Next**

At this step you will create the split in the patrol. Other options are also available using this screen.

The screenshot shows a software window titled "Create New Patrol". Inside, there is a text box that says "Setup Patrol Legs. Patrol legs are identified by changes in the patrol leader or the patrol splitting into multiple groups. Use the buttons below to add, remove, or edit legs." Below this, it displays "Patrol Start: Sep 1, 2012" and "Patrol End: Sep 3, 2012". A table lists patrol legs with columns for Leg, Start Date, End Date, Transport Type, Leader, and Members. The first leg is highlighted. Below the table are five buttons: "Change of Transport", "Change of Leader", "Patrol Split" (highlighted with a red border), "Remove Leg", and "Edit Leg". At the bottom right are four navigation buttons: "< Back", "Next >", "Finish" (highlighted in blue), and "Cancel".

Leg	Start Date	End Date	Transport Type	Leader	Members
1	Sep 1, 2012 12:00:00 AM	Sep 3, 2012 11:59:59 PM	Truck	Dana Owens [SMART1]	4: Dana O

- Select **patrol leg 1**
- Click **Patrol Split**

Change of Transport - allows for a change of transportation type

Change of Leader - allows for the leader of the patrol to change

Patrol Split - the base patrol splits off into two groups each with their own leader and transport type

For this example you will create a multi-leg patrol where the group physically splits up to cover different ground and then recombines in the final leg to finish the patrol. The following screenshot is the initial screen used to define the patrol split.

Patrol Split

Select information for the patrol split.

Date of Split: Saturday , September 01, 2012

Time of Split: ☒ Start of Day ☐ Custom: 12:00:00 AM

Date Groups Joined: Monday , September 03, 2012

Time Groups Joined: ☒ End of Day ☐ Custom: 11:59:59 PM

Dana Owens [SMART1]
 Ellen Cohen [SMART2]
 Roger Barrett [SMART3]
 Paul Hewson [SMART4]

Group A

Transportation Type: Truck

Members:

-> <-

Group A Leader:

Group B

Transportation Type: Truck

Members:

-> <-

Group B Leader:

OK Cancel

You should use the following screenshot as reference to what features need to be changed when defining a multi-leg patrol. For this example the group will split up at the start of the second day and recombine at the end of the same day. Two members will continue on in the truck and the other two will complete their patrol leg on foot.

Patrol Split

Select information for the patrol split.

Date of Split: Sunday, September 02, 2012

Time of Split: ☒ Start of Day ☐ Custom: 12:00:00 AM

Date Groups Joined: Sunday, September 02, 2012

Time Groups Joined: ☒ End of Day ☐ Custom: 11:59:59 PM

Group A

Transportation Type: Truck

Members:

-> Dana Owens [SMART1]
Ellen Cohen [SMART2]

<-

Group A Leader: Dana Owens [SMART1]

Group B

Transportation Type: Foot

Members:

-> Roger Barrett [SMART3]
Paul Hewson [SMART4]

<-

Group B Leader: Roger Barrett [SMART3]

OK Cancel

Patrol Split Dates and Times

Date of Split: **Sunday September 2, 2012**

Time of Split: **Start of Day**

Date Groups Joined: **Sunday September 2, 2012**

Time Groups Joined: **End of Day**

Setup - Group A

Transportation Type: **Truck**

Members: **Dana Owens, Ellen Cohen**

Group A Leader: **Dana Owens**

Setup - Group B

Transportation Type: **Foot**

Members: **Roger Barrett, Paul Hewson**

Group A Leader: **Roger Barrett**

- At the end of the setup click **OK**

The screenshot shows a software window titled "Create New Patrol". Inside, there is a text box explaining that patrol legs are identified by changes in the patrol leader or the patrol splitting into multiple groups. Below this, it shows the patrol start and end dates as "Sep 1, 2012" and "Sep 3, 2012". A table lists the patrol legs with columns for Leg, Start Date, End Date, Transport Type, Leader, and Members. The table shows a split from a single leg into two groups (A and B) on Sep 2, 2012, and then back to a single leg on Sep 3, 2012. Below the table are buttons for "Change of Transport", "Change of Leader", "Patrol Split" (which is highlighted with a blue border), "Remove Leg", and "Edit Leg". At the bottom right are buttons for "< Back", "Next >", "Finish", and "Cancel".

Leg	Start Date	End Date	Transport Type	Leader	Members
1	Sep 1, 2012 12:00:00 AM	Sep 2, 2012 12:00:00 AM	Truck	Dana Owens [SMART1]	4: Dana Owens [SMART1]; Eller
1 - Group A	Sep 2, 2012 12:00:00 AM	Sep 2, 2012 11:59:59 PM	Truck	Dana Owens [SMART1]	2: Dana Owens [SMART1]; Eller
1 - Group B	Sep 2, 2012 12:00:00 AM	Sep 2, 2012 11:59:59 PM	Foot	Roger Barrett [SMART3]	2: Roger Barrett [SMART3]; Pau
1 - End	Sep 2, 2012 11:59:59 PM	Sep 3, 2012 11:59:59 PM	Truck	Dana Owens [SMART1]	4: Dana Owens [SMART1]; Eller

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

[illegible]

- SMART Technical Training Manual

After accessing the day where the multi-leg patrol took place on 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.

Patrol SMART_000002

Patrol Day: Sunday, Sep 2, 2012

▼ Leg: 1 - Group A

Start Time: 12:00:00 AM
End Time: 11:59:59 PM
Rest Minutes: 0
Total Hours Patrolled: 24.00

Distance Travelled (km): 0
[Set Track ...](#)
[View TrackPoints...](#)

Observations / Waypoints: [Import Waypoints ...](#)

Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments

Add Waypoint
Delete Waypoint(s)
Move Waypoint(s)

▼ Leg: 1 - Group B

Start Time: 12:00:00 AM
End Time: 11:59:59 PM
Rest Minutes: 0
Total Hours Patrolled: 24.00

Distance Travelled (km): 0
[Set Track ...](#)
[View TrackPoints...](#)

Observations / Waypoints: [Import Waypoints ...](#)

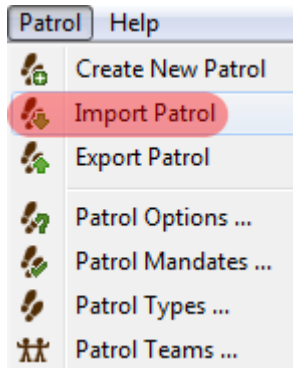
Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments

Add Waypoint
Delete Waypoint(s)
Move Waypoint(s)

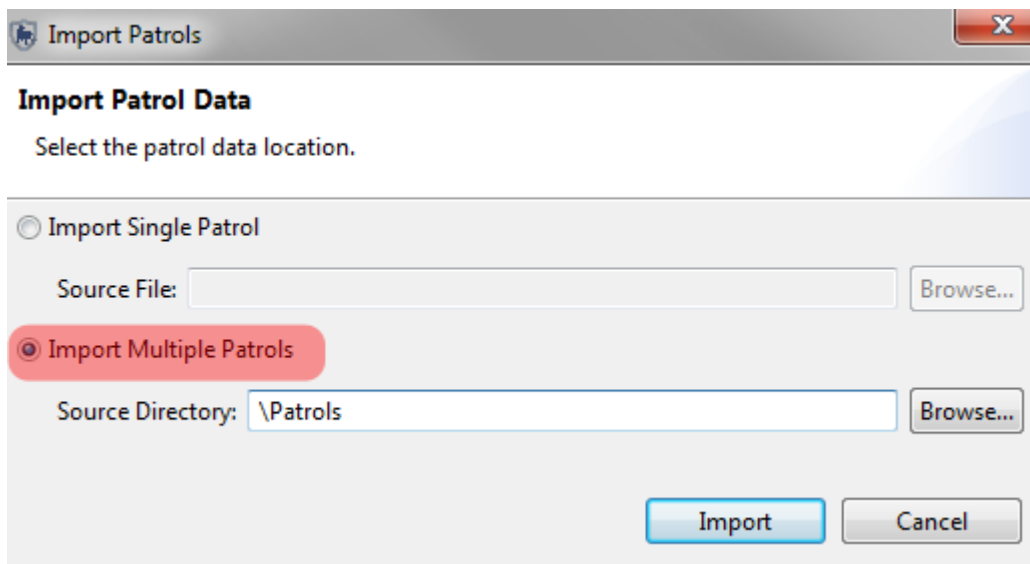
Summary
Sep 1, 2012
Sep 2, 2012
Sep 3, 2012
Map

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**



Individual patrols or a bulk load of patrols is possible in SMART. For this exercise you will perform a bulk load of patrols.

- Select **Import Multiple Patrols**
- Browse to the folder **Module 2 \ Patrols**
- Click **Import**

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

<End of Module 2 - Patrols>

Module 3 – Map Navigation

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 Labelling
- Exporting Data
- Setting Basemaps
- Identifying Features

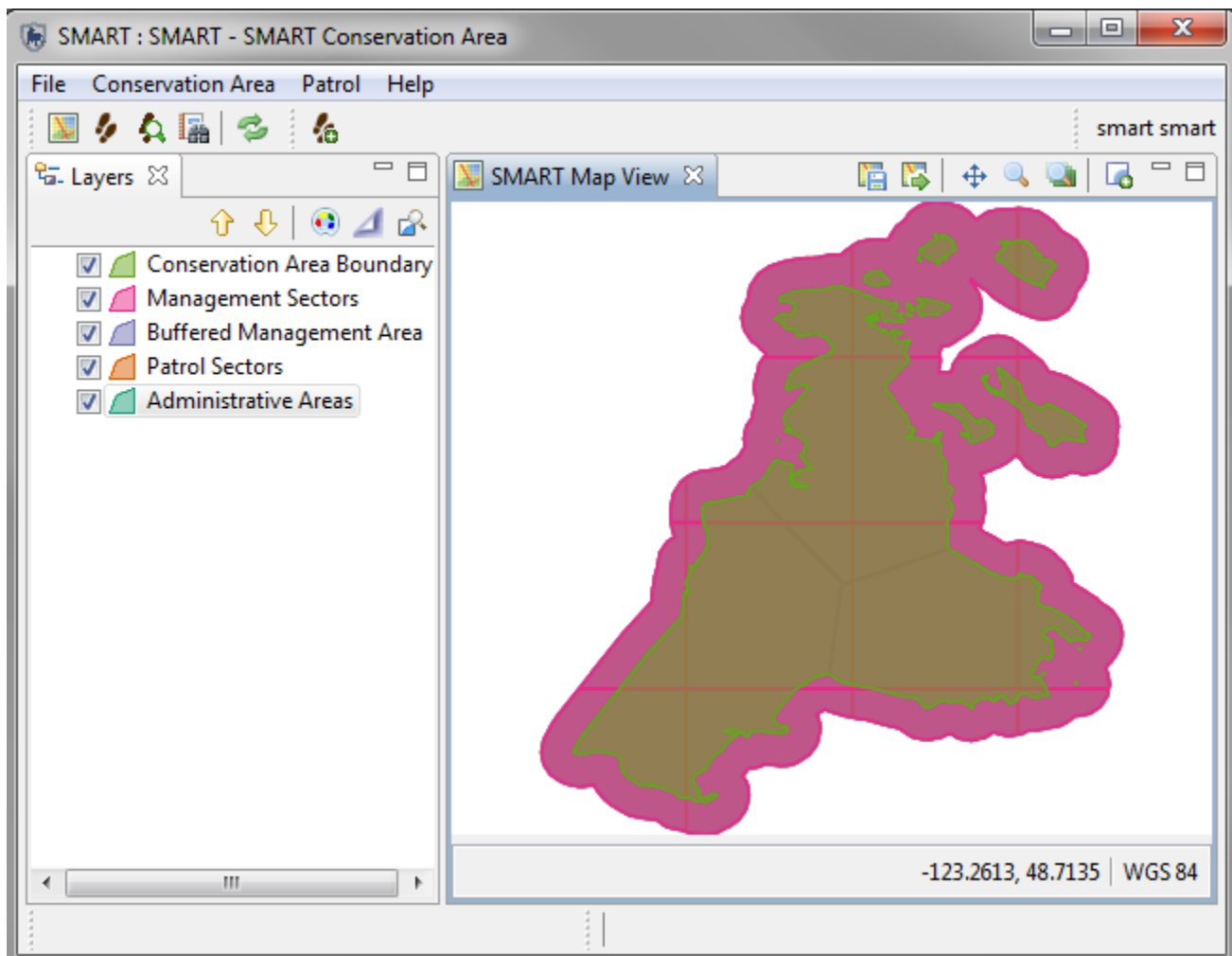
Detailed Steps:

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 able to be easily viewed within SMART's mapping framework.



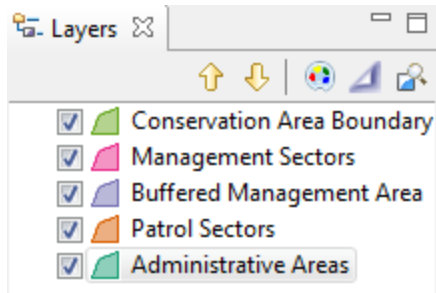
- Click the Map Perspective icon






The Map Perspective contains two main sections. On the right is the mapping window called SMART Map View and on the left is the administrative 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. In this window will be displayed the five (5) previously loaded administrative layers in the Layers tab found on the left side of the screen. 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

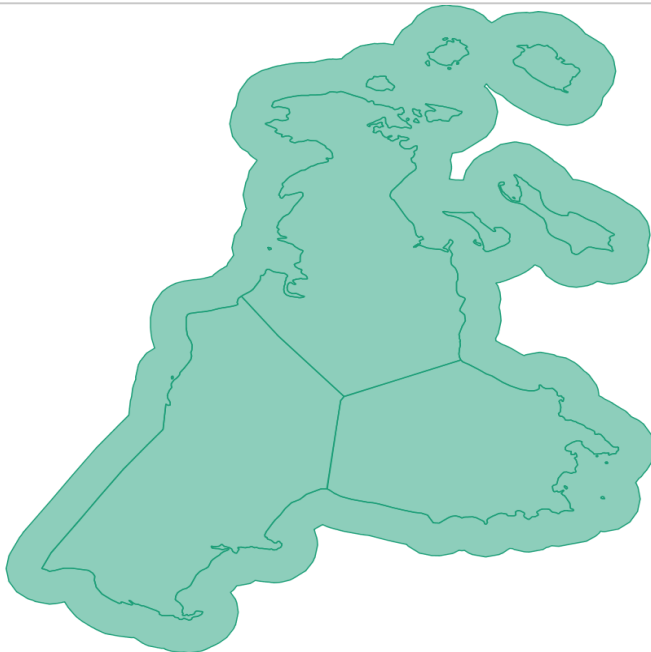
- Turn layers **off/on** by clicking the checkbox next to a layer
- Move layers **up/down** by using the arrows or by dragging the layer
- Select Conservation Area Boundary and click **Zoom to selected layers** icon

Changing Styling

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

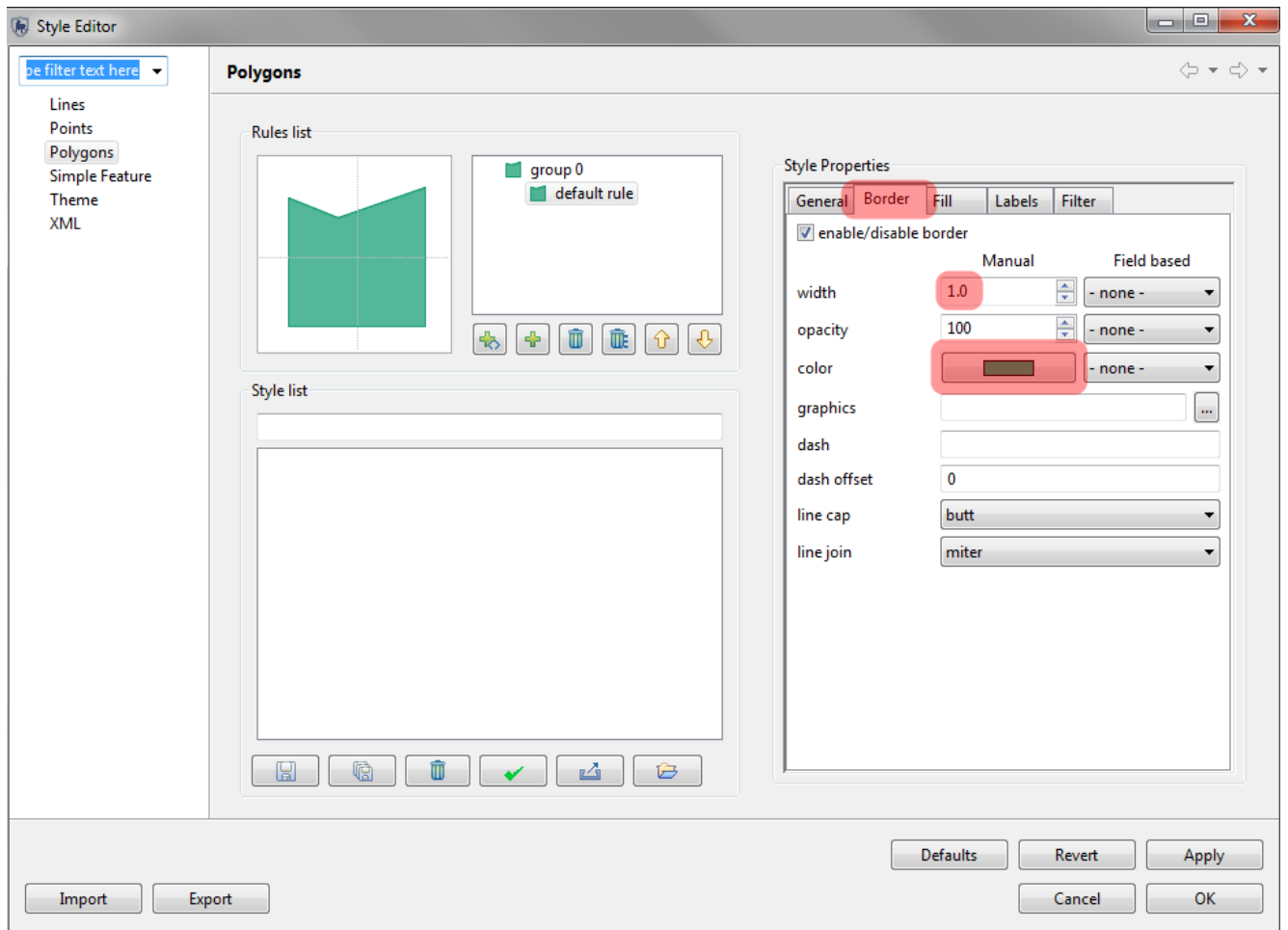
-
- ☐  Conservation Area Boundary
 - ☐  Management Sectors
 - ☐  Buffered Management Area
 - ☐  Patrol Sectors
 - ☒  Administrative Areas

- Turn **off/on** all layers except for **Administrative Areas**
- Select and highlight **Administrative Areas**

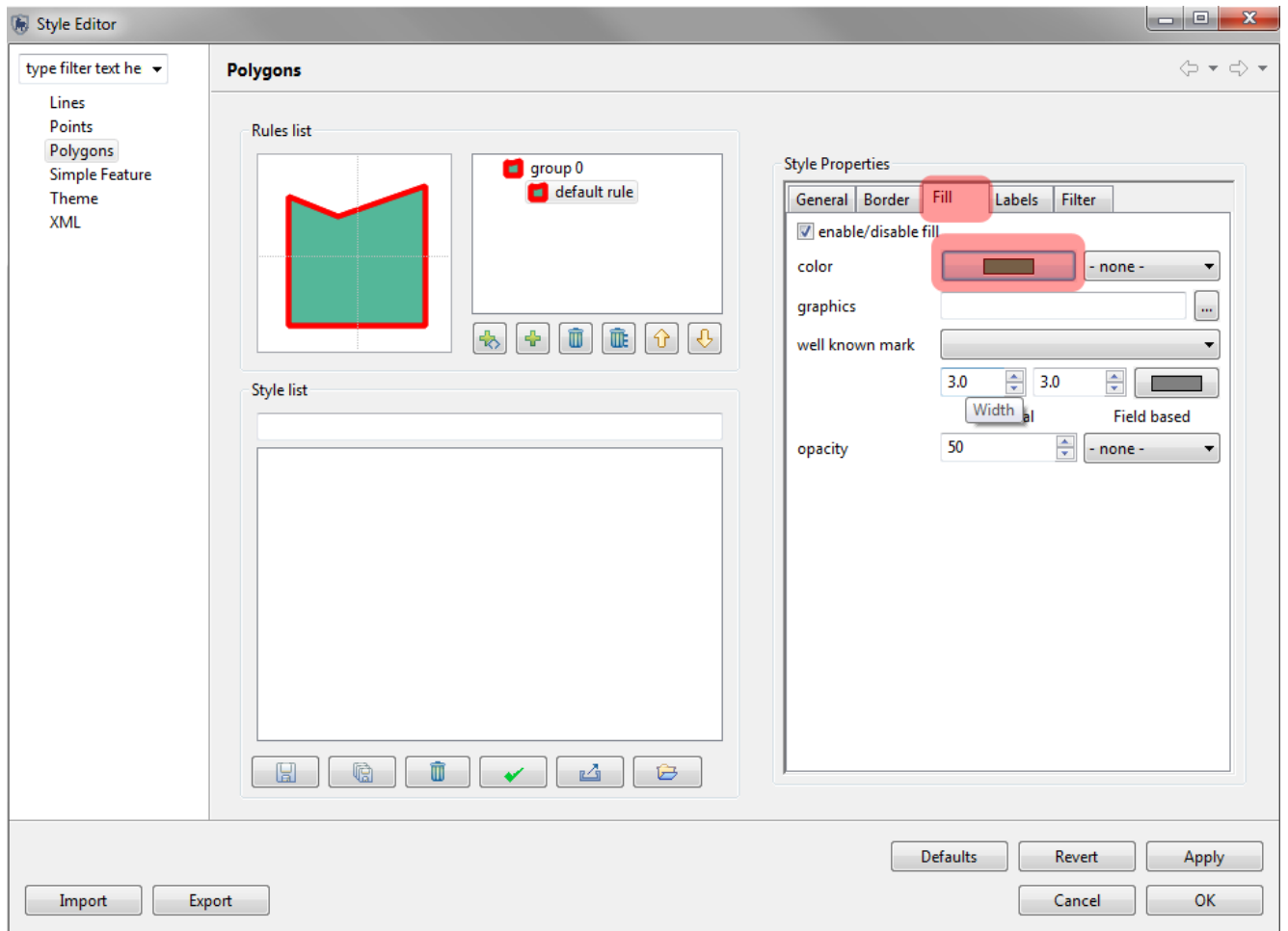


- Click the style icon 

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.

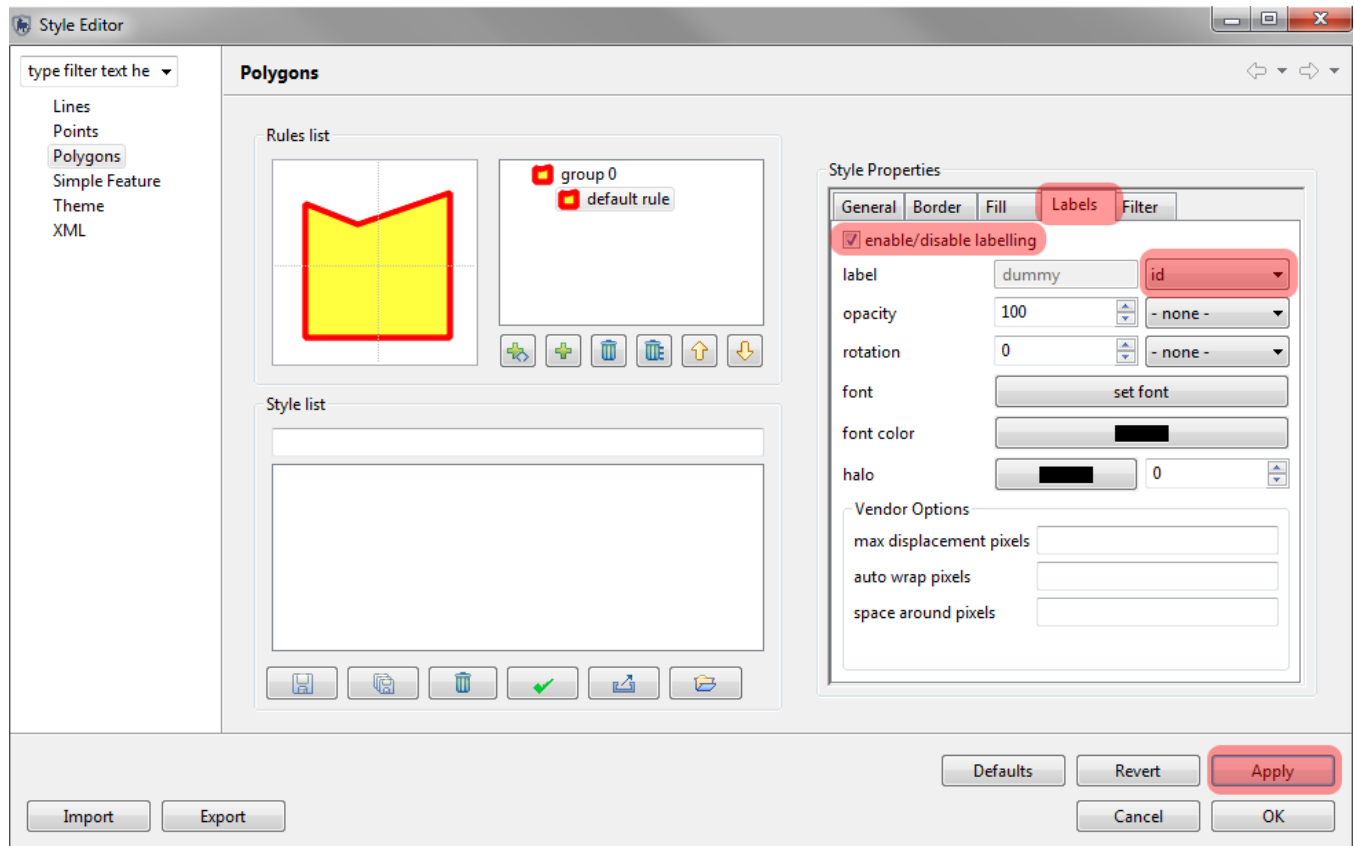


- Click the tab **Border**
- Click **color** to open the color selector
- Select the color **Red**
- Click **OK**
- Set the width to **3.0**



- Click the tab **Fill**
- Click **color** to open the color selector
- Select the color **Yellow**
- Click **OK**

Your Administrative Area polygon should appear yellow with a thick red border.









- Click the tab **Labels**
- Click **enable/disable labelling** to activate labelling
- In the pulldown of label select **id**
- Click **Apply**
- Click **OK**

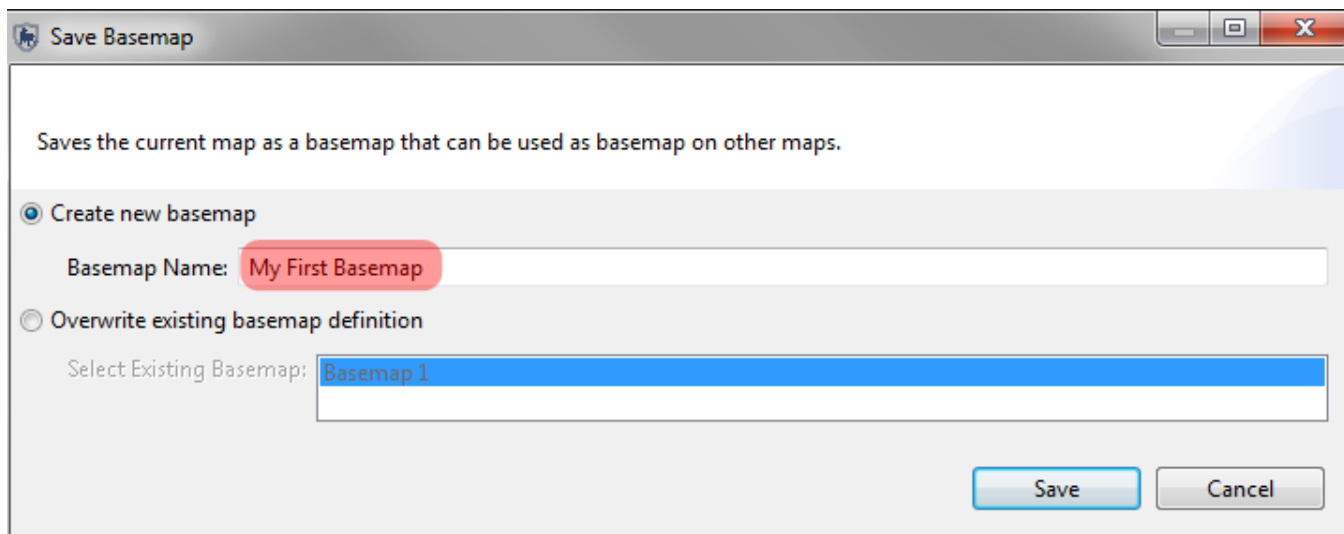
In the SMART Map View window your Administrative Area layer should appear as below.



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.

	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

- To save your first Basemap click the **Save Basemap Icon** 



The 'Save Basemap' dialog box has a title bar with a close button. The main text says 'Saves the current map as a basemap that can be used as basemap on other maps.' There are two radio buttons: 'Create new basemap' (selected) and 'Overwrite existing basemap definition'. Under 'Create new basemap', there is a text field 'Basemap Name:' with the value 'My First Basemap'. Under 'Overwrite existing basemap definition', there is a dropdown menu 'Select Existing Basemap:' with 'Basemap 1' selected. At the bottom right are 'Save' and 'Cancel' buttons.

- Select **Create new basemap**
- Enter in Basemap Name: **Module 3 - Basemap 1**
- Click **Save**

Administrative Areas has been set but the remainder of the other layers are still unstyled. You will now need to set the other layers to match the following screenshot.

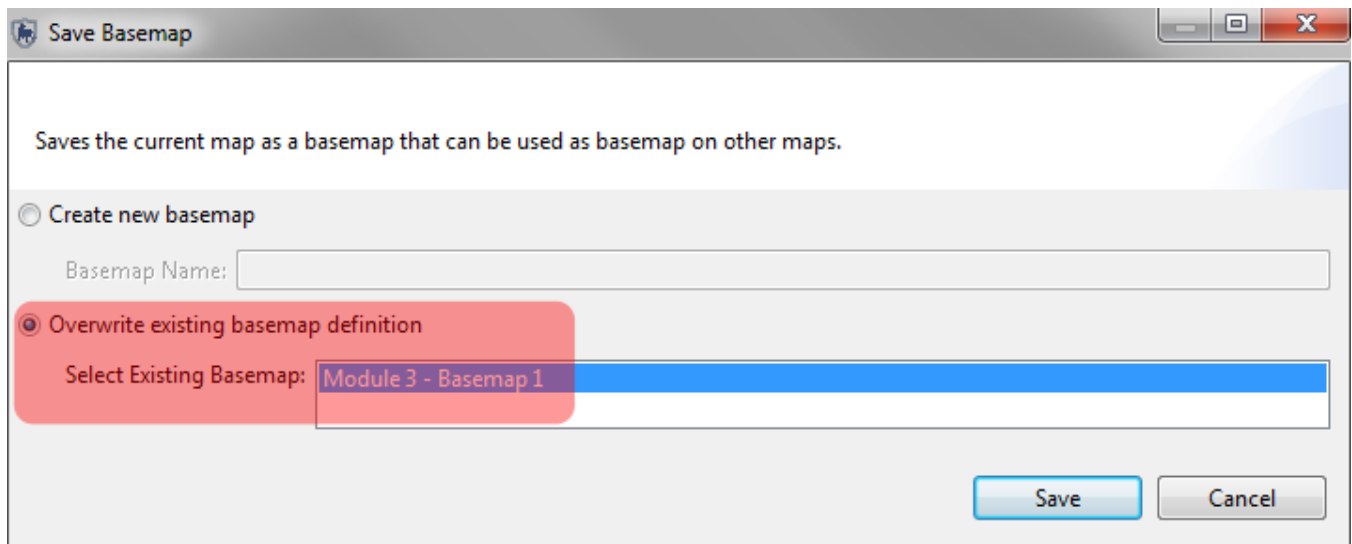
Colors to use for Module 3 - Basemap 1

Set the remainder of the layers using the specifications in the following table.

Layer	Border Color	Border Width	Fill Color	Label
Administrative Area	Red	3	Yellow	ID
Conservation Area	Dark Green	3	Light Green	none
Management Sector	Dark Pink	3	Light Pink	none
Buffered Management Area	Dark Blue	3	Light Blue	none
Patrol Sector	Black	3	Light Gray	none



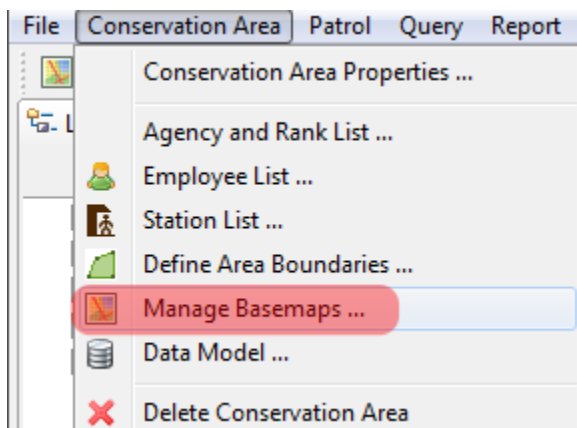
- Order the layers so Administrative Areas is on Top and the ones below follow the same order.



- After the styling has been set re-save and overwrite **Module 3 - Basemap 1**

Setting a Saved Basemap

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

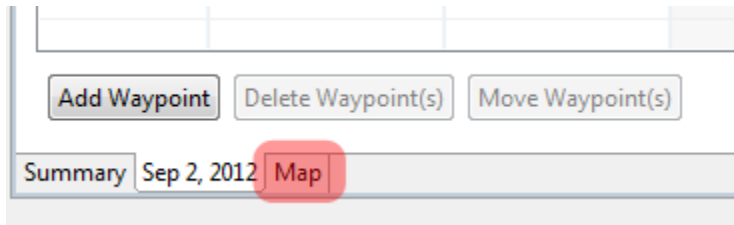


- From the menu select **Manage Basemaps**
- Select **Module 3 - Basemap 1**
- Click **Set as Default**
- Click **Save**
- Click **Close**

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_000001** (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

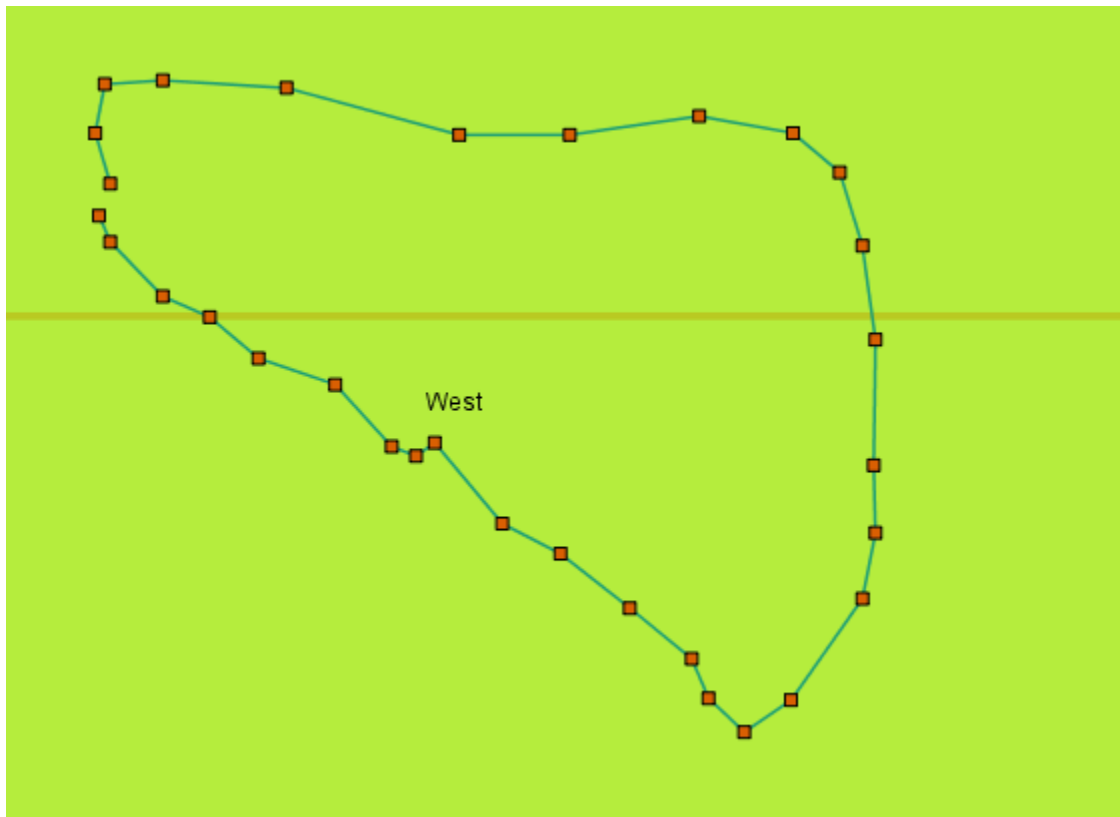
The Patrol SMART_000001 should appear in the Administrative Area (West).



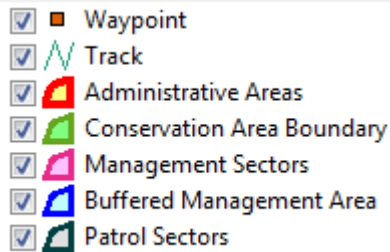


- Using the Zoom icon  draw a box around the circle of waypoints for the patrol

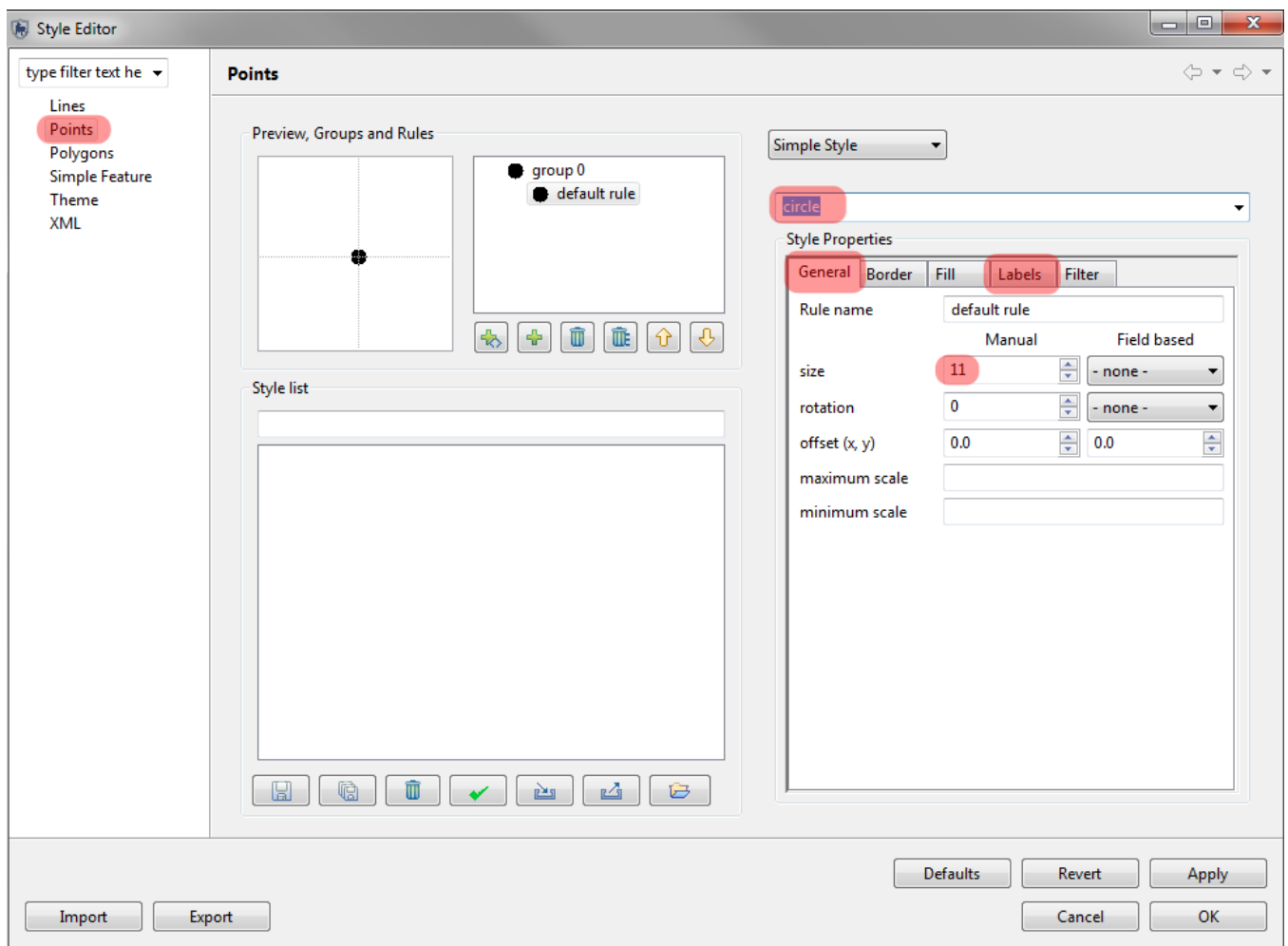
At this point you should see the series of waypoints that were collected for the patrol SMART_000001 and the track for that patrol.



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

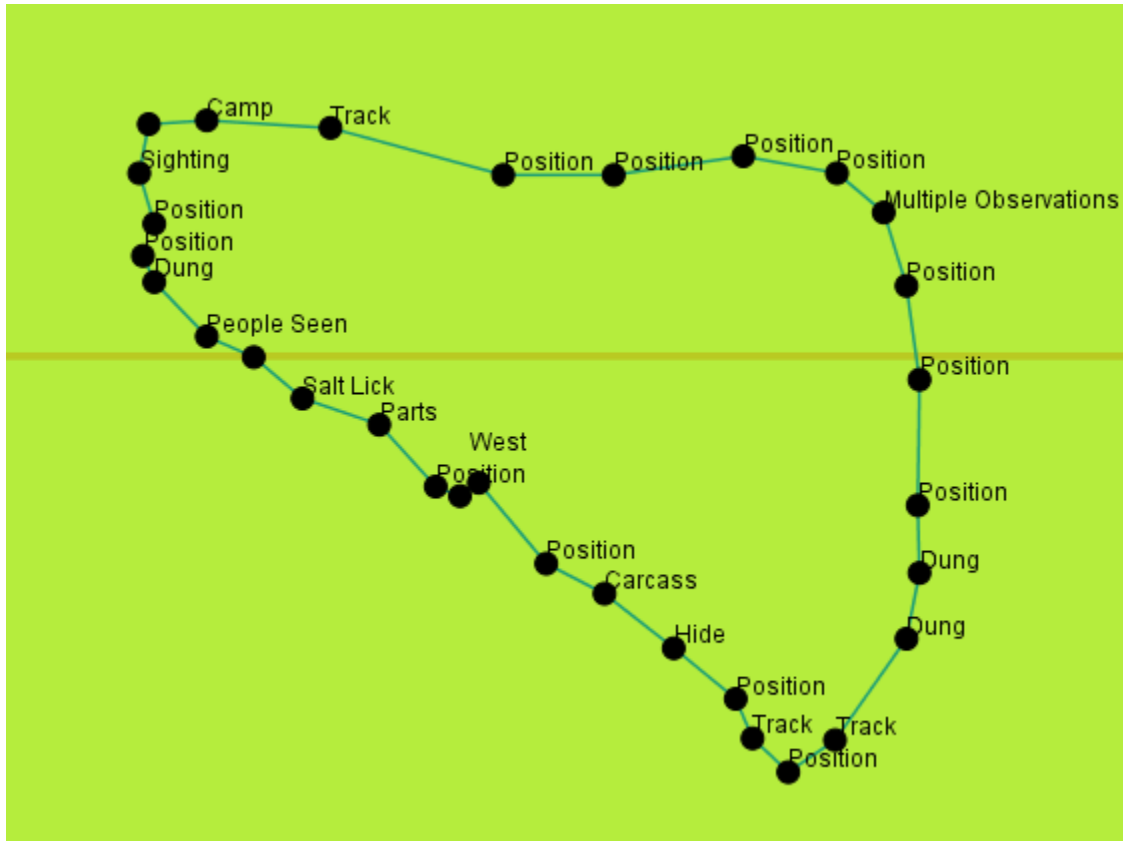


As with the boundary layers the Waypoint and Track layer can be styled and labelled.




- 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**



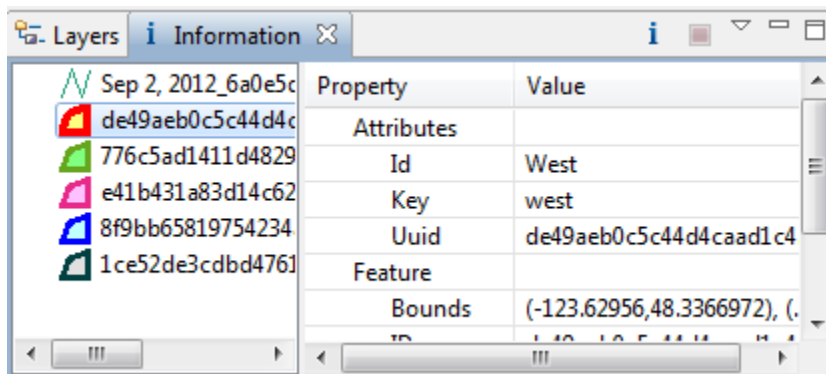
Information Tool

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**
- On the left the information will be shown in the Information tab



Note: If the original size of the window isn't sufficient to view the results you should resize the window to allow for easier reading.

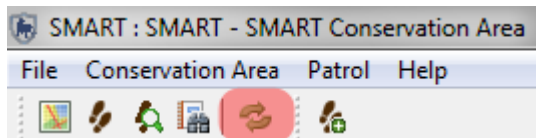
Property	Value
▲ Attributes	
Comment	
Date	2012-09-02 00:00:00.0
Fid	10_12aa63394be140288ea2...
Id	10
Observation	Multiple Observations
Time	02:10:59
▲ Feature	
Bounds	(-123.49835,48.5364382), (...)
ID	10_12aa63394be140288ea2...
▲ Geometries	
▶ Default Geo	Point

By clicking on the map layers you can view the attributes for each of the layers that were underneath the point where you used the Info Tool.

Property	Value
▲ Attributes	
Id	West
Key	west
Uuid	de49aeb0c5c44d4caad1c4...
Feature	
Bounds	(-123.62956,48.3366972), (...)
ID	de49aeb0c5c44d4caad1c4...
Geometries	
Default Geo	MultiPolygon

- Click the **Administrative Area** layer (red and yellow) to view the attributes associated with that layer

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_000001.

- To return to the full extent click the **Zoom to Full Extent icon** 

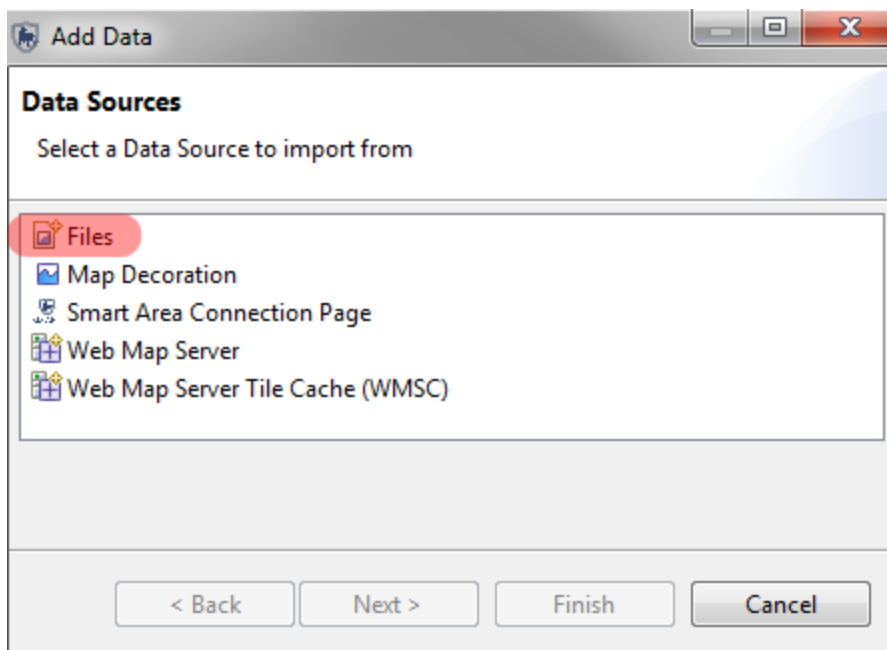
Adding New Layers

During the configuration of the Conservation Area you were guided through the process of loading the five (5) base boundary layers.

SMART's mapping framework allows for the addition of:

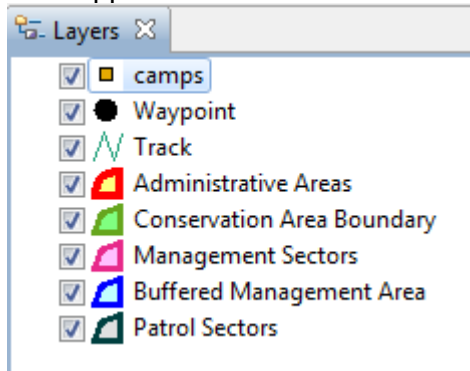
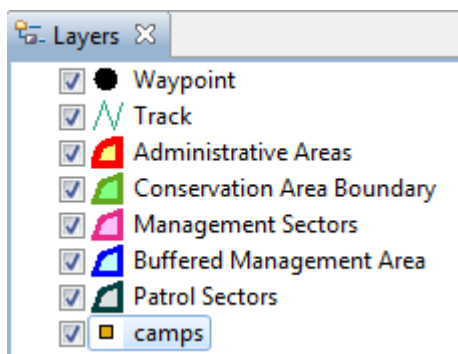
- Custom data layers (Files)
- Cartographic items (Map Decoration)
- SMART boundary layers (Smart Area Connection Page)
- Web Mapping Server
- Web Mapping Server Tile Cache (WMSC)

- In the upper right part of the SMART application click the **Add Data icon** 



- Select **Files**
- Open the folder **Module 3**
- Select the file **camps.shp**
- Click **Open**

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

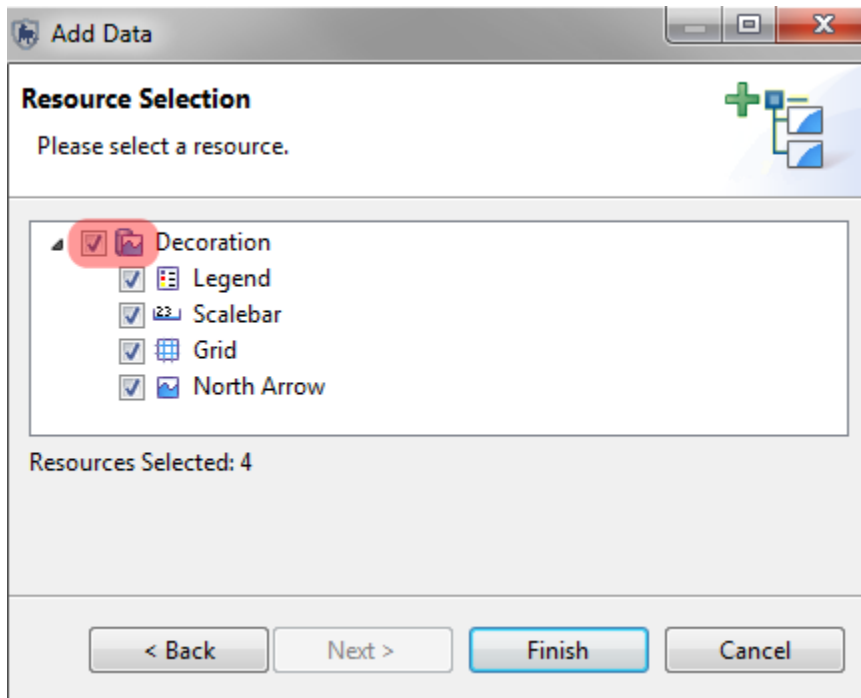


- Select the layer camps and **move it to the top** of the list

Adding Map Decorations

Map decorations are cartographic elements that add usability to a map.

- Click the **Add Data icon** 
- Select **Map Decoration**
- Click **Next**



- In the Resource Selection window click the **checkbox** next to Decoration to highlight all features.
- Click **Finish**



Note: As with the data layers the Map Decorations have customization options and are edited using the same Custom Style icon.

<End of Module 3 - Map Navigation>

Module 4 – Data Collection

Objective:

In this module, you will gain experience in recording observations, transferring GPS waypoints into SMART, and also entering the field observations into 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;
- creating new patrols based on the field exercise;
- transferring waypoint data directly into SMART; and,
- entering in observations collected during the field exercise.

Detailed Steps:

Collecting Waypoints and Observations

For this exercise you will head outside to collect GPS waypoints and record observations that will be used to populate a SMART patrol. You will need your GPS and the field observations sheets. On the grounds, you will head out on a walk to collect **8** waypoints and an observation at each waypoint.

At each waypoint you will need to:

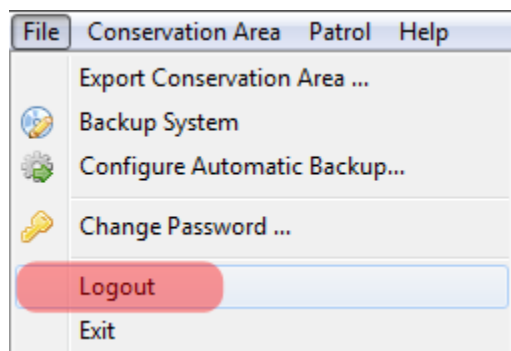
- collect (mark) a GPS waypoint using the default settings for waypoint number from your GPS;
- record the observation and waypoint number on the field observation sheet; and,
- proceed to collect the next waypoint.

Note: Observations can be actual observations of animals or observations that are invented. A sample list of observations exists later in this document and can be used to populate the observations list.

AFTER you have returned from collecting waypoints and observation data:

Opening a New Conservation Area

Included alongside the SMART Conservation Area used for training is a secondary Conservation Area called ***Pretoria - Farm Inn Pretoria***.



- In the menu select **Logout**



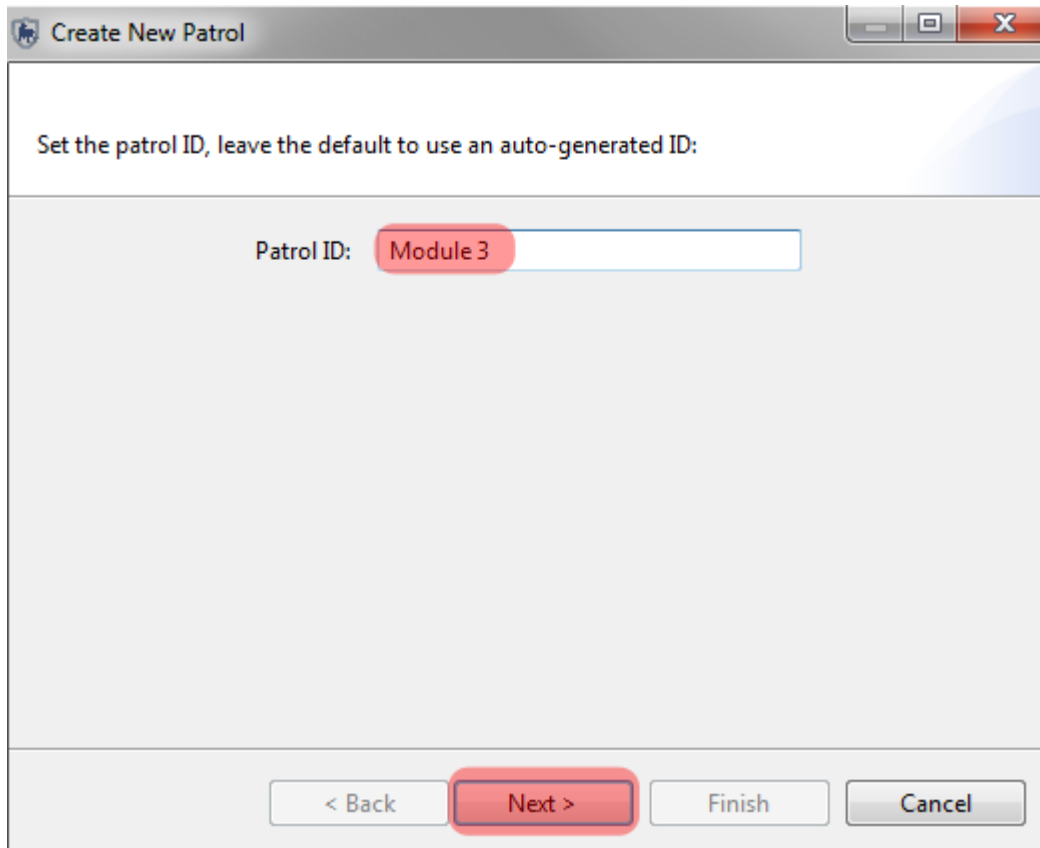
- Select **Pretoria - Farm Inn Pretoria**
- Log in using:
 - username = **smart**
 - password = **smart**
- Click **Login**

This Conservation Area has already been configured to include:

- boundary files for the area around the Farm Inn Pretoria;
- the same data model as the SMART - SMART Conservation Area;
- an employee list containing the names of the attendees; and,
- stations, patrol teams, mandates and transportation types.

Creating a New Patrol

Note: Previously this module was named Module 3 and the workflow and screenshots still reference the older name. This will not affect your ability to complete Module 4 - Data Collection.



Set the patrol ID, leave the default to use an auto-generated ID:

Patrol ID:

< Back **Next >** Finish Cancel

- From the menu select **Create New Patrol**
- In the Patrol ID: type in **Module 3**
- Click **Next** to accept the name
- Click **Next** to accept the patrol type of Ground (*note: other transport types have been disabled*)
- Select **Foot**
- Click **Next**
- Select **No** for Is this patrol armed?
- Click **Next**

Create New Patrol

Select the station and team associated with the patrol. Select (none) if station/team not applicable.

Team: Training Team

Station: Training Room

< Back Next > Finish Cancel

- Select Team = **Training Team**
- Select Station = **Training Room**
- Click **Next**
- Select Patrol Mandate = **SMART Training**
- Click **Next**

Create New Patrol

Enter the patrol objective.

Patrol Objective:

To learn how to transfer data from the GPS into SMART

< Back Next > Finish Cancel

- Type in **To learn how to transfer data from the GPS into SMART**
- Click **Next**

Create New Patrol

Enter any comments associated with the patrol.

Patrol Comments:

Nice to get outside!

< Back Next > Finish Cancel

- Type in **Nice to get outside!**
- Click **Next**

Create New Patrol

Select the start and end dates for the patrol.

Patrol Start Date: Wednesday, September 12, 2012

Patrol End Date: Wednesday, September 12, 2012

< Back Next > Finish Cancel

- Select **Wednesday, September 12, 2012** for both dates
- Click **Next**

Create New Patrol

At least one employee must be selected

Select members that participated in the patrol:

All Employees:

Antony Lynam [SMART006]
Richard Bergl [SMART014]
Francis Okeke [SMART018]
Darrin Charmley [SMART019]
Philip Kayal [SMART020]
Jeffrey Lounsbury [SMART021]
Jonathan Palmer [SMART022]
Lynn Duda [SMART023]
Fredrick Wanyama [SMART024]
Kamon Faengbubpha [SMART031]
Padu Franco [SMART030]
Luis Romero [SMART029]
Deo Kujirakwinja [SMART026]
Mufeng Voon [SMART025]
Emma Stokes [SMART027]
Ruth Starkey [SMART028]
Craig Bruce [SMART032]
Carrie Stengel [SMART033]
Wei Lim Yap [SMART034]
Cédric François Sepulcre [SMART035]
Zacharie Laurent Nzooh Dongomo [SMART036]
WWF WWF [SMART037]
Rajan Amin [SMART038]
smart smart [195000000]
Kholis Munawar [SMART001]
Oktafa Puspita [SMART004]
Elsabe van der Westhuizen [SMART003]
Prince Kaleme [SMART002]
Edison Nuwamanya [SMART010]
Julian Blanc [SMART013]
Sébastien Luhunu [SMART011]
Martha Bechem [SMART012]
Tapera Chimuti [SMART009]
Olivia Needham [SMART039]

Selected Employees:

Add ->

<- Remove

< Back

Next >

Finish

Cancel

- Select the names of your team members
- Click **Add ->** to move them into the Selected Employees window
- Click **Next**
- Select a Patrol Leader
- Click **Next**
- Accept default of **No** for a multi-leg patrol
- Click **Finish**

After the patrol framework has been entered, the patrol perspective screen will appear:

Module 3

Patrol Information

Patrol Type: Ground
 Transportation Type: Foot [edit](#)
 Armed?: ☐ [edit](#)
 Mandate: SMART Training [edit](#)
 Team: Training Team [edit](#)
 Station: Training Room [edit](#)
 Members: [\[Leader\] smart smart \[195000000\]](#) [edit](#)

Patrol ID: Module 3 [edit](#)
 Objective: To learn how to transfer data from the GPS into SMART [edit](#)
 Comment: Nice to get outside! [edit](#)

Patrol Data

Start Date: September 12, 2012 End Date: September 12, 2012 [edit](#)

Day	Start Time	End Time	Distance	Hours
Sep 12, 2012 Wed	12:00:00 AM	11:59:59 PM	0	24.00

Summary **Sep 12, 2012** Map

Layers

- ☒ Conservation Area Boundary
- ☒ Management Sectors
- ☒ Buffered Management Area
- ☒ Administrative Areas
- ☒ Patrol Sectors
- ☒ Waypoint
- ☒ Track

- Verify that the information for the patrol has been entered correctly.
- If there are any errors, click the [edit](#) link next to the item and make the correction.
- On the bottom of the screen, click the tab **Sep 12, 2012**

Patrol Module 3

Patrol Day: Wednesday, Sep 12, 2012

Start Time: 12:00:00 AM End Time: 11:59:59 PM Rest Minutes: 0 Total Hours Patrolled: 24.00

Distance Travelled (km): 0 [Set Track...](#) [View TrackPoints...](#)

Observations / Waypoints: [Import Waypoints ...](#)

Waypoint Id	Longitude	Latitude	Time	Observation	Comment	Attachments

- Enter in the **Start Time**, **End Time** and number of **Rest Minutes** taken
- Click [Import Waypoints ...](#)

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**.

Import Waypoint Data

Select the location where you wish to import waypoints from.

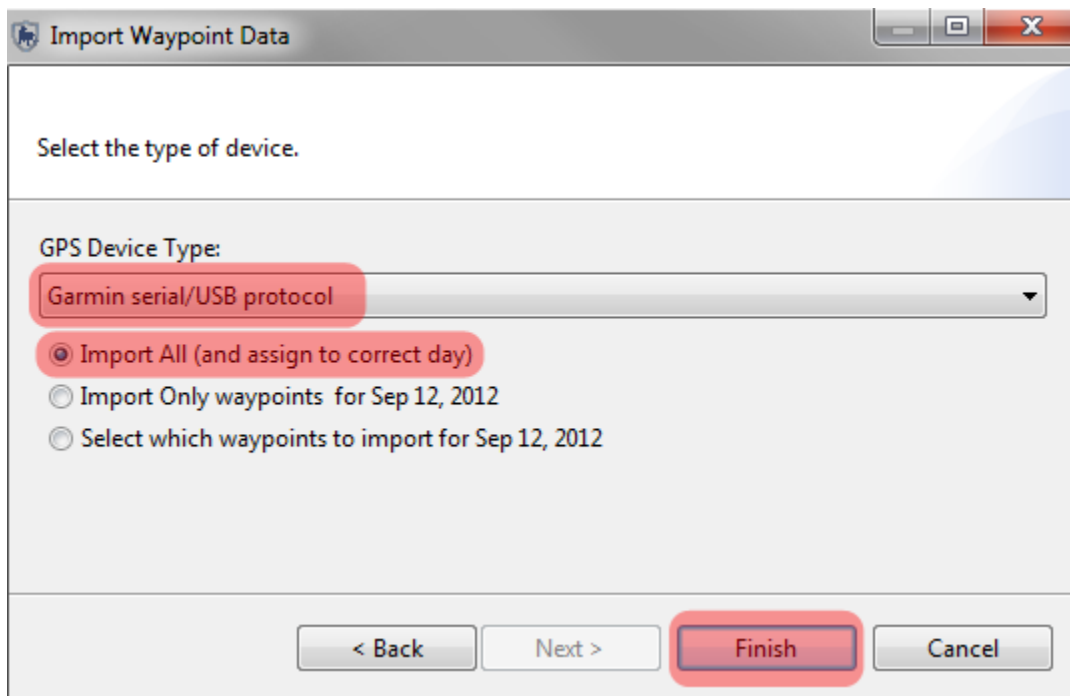
Import waypoints from:

☒ GPS Device

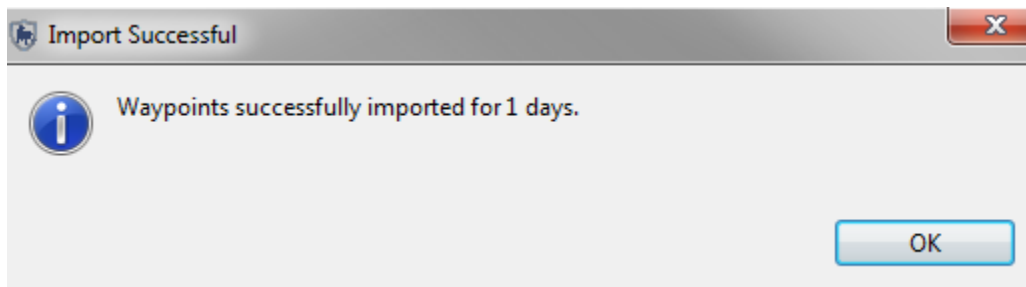
☐ GPX File

< Back Next > Finish Cancel

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



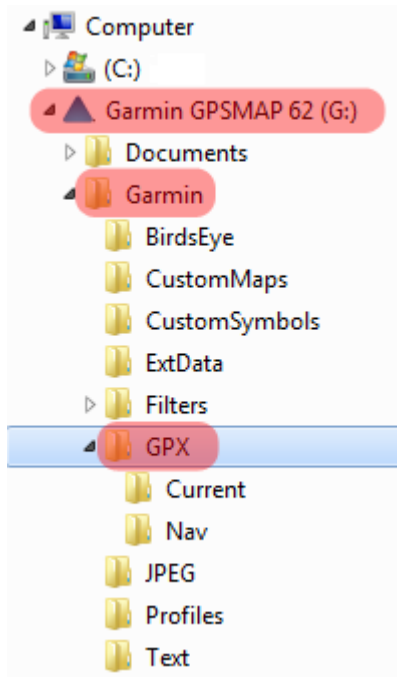
- Select **Garmin serial/USB protocol**
- Select **Import All (and assign to correct day)**
- Click **Finish**



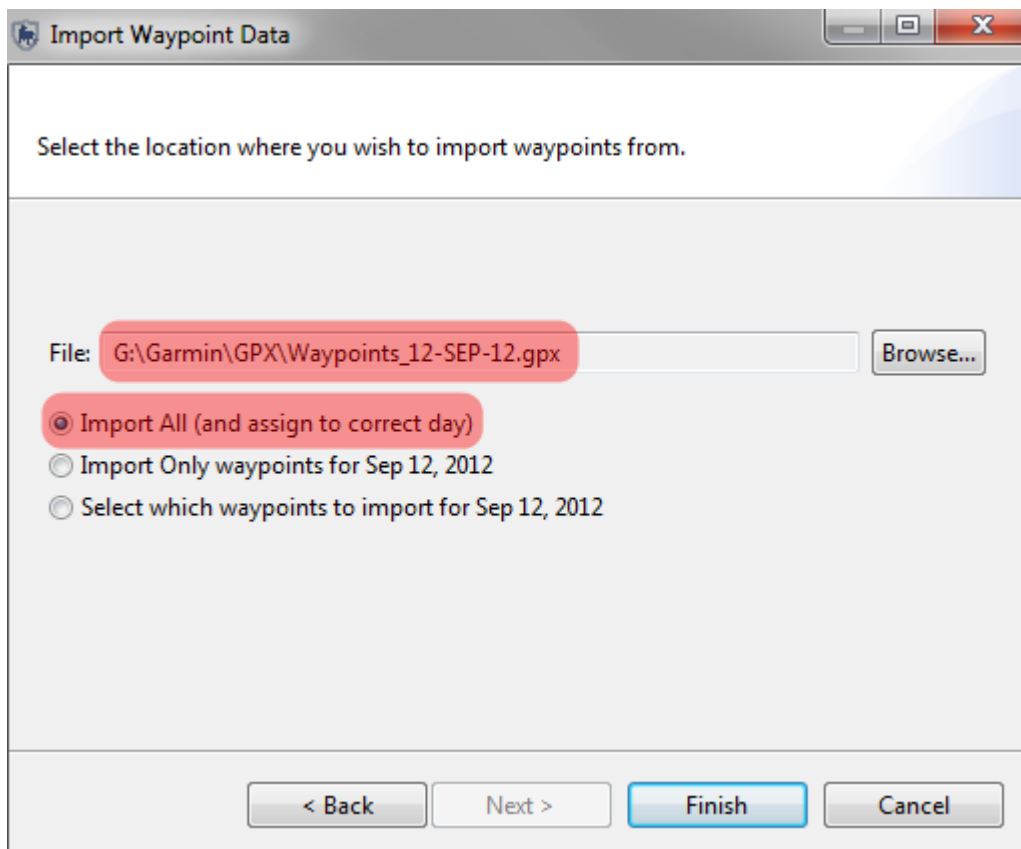
- Click **OK**

Importing Waypoints using the Garmin GPSmap 62

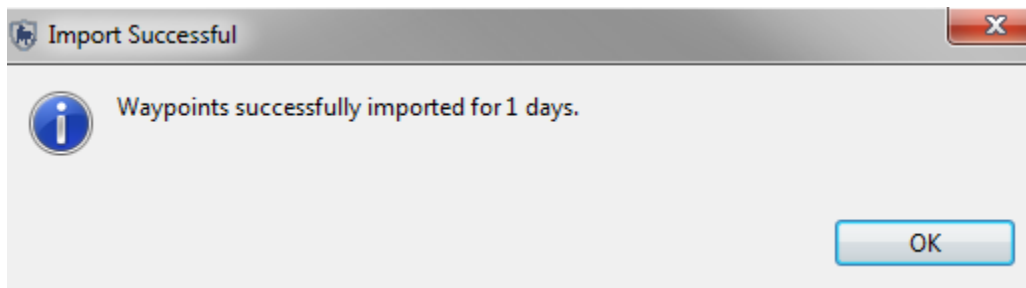
The Garmin GPSmap 62 functions a little differently than the Garmin 60CSx and requires a few more steps before the data can be imported into SMART. The Garmin GPSmap 62 behaves like an external storage device and requires you to select the **GPX File** option when importing waypoints.



- Browse to the folder on your GPS called **Garmin\GPX**
- Select the file **Waypoints_12-Sep-12.gpx**
- Click **Open**



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



- Click **OK**

A successful import will bring up the 8 waypoints collected during the field exercise.

Patrol Module 3

Patrol Day: Wednesday, Sep 12, 2012

Start Time: 10:21:01 AM End Time: 10:45:59 PM Rest Minutes: 0 Total Hours Patrolled: 12.42

Distance Travelled (km): 0 [Set Track ...](#) [View TrackPoints...](#)

Observations / Waypoints: [Import Waypoints ...](#)

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.

Import Track Data

Select the location where you wish to import tracks from.

Import tracks from:

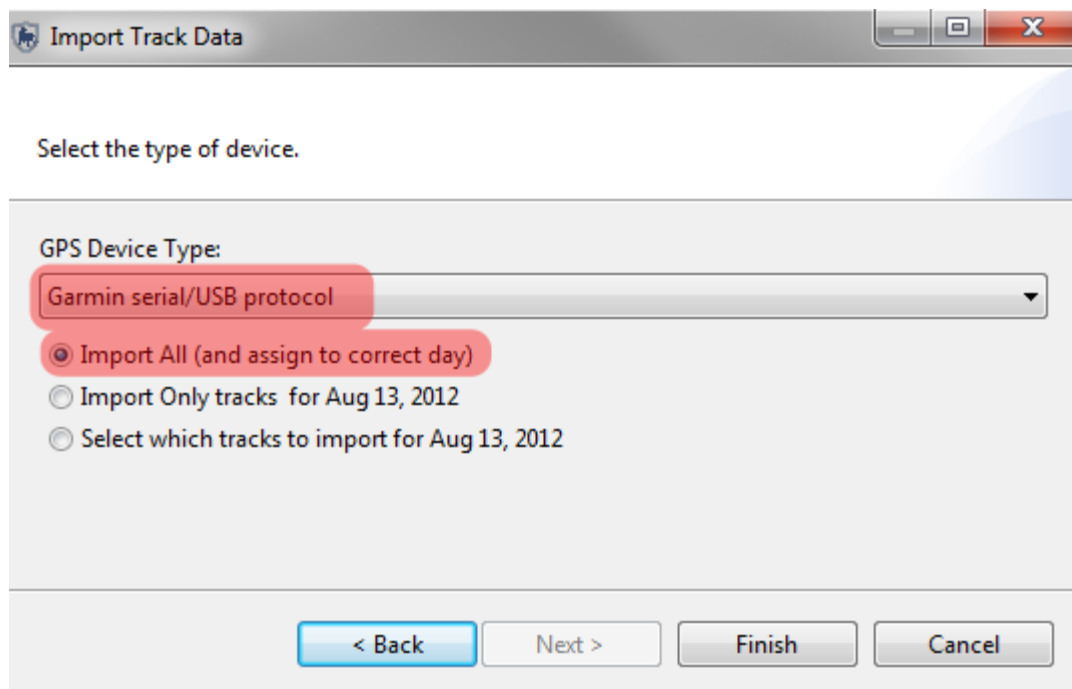
☒ GPS Device

☐ GPX File

☐ Generate from Waypoints

< Back Next > Finish Cancel

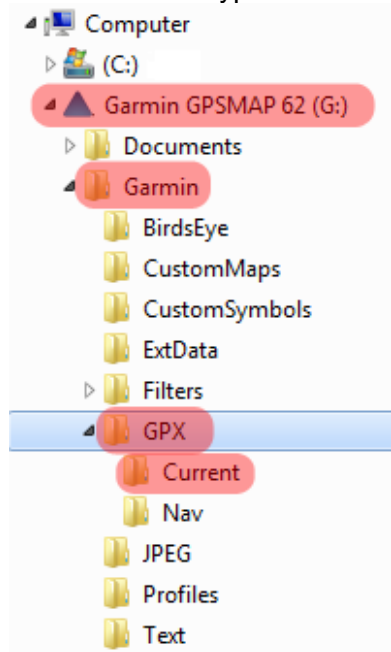
- Select **GPS Device**
- Click **Next**



- 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.



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

Import Track Data

Select the location where you wish to import tracks from.

File: G:\Garmin\GPX\Current\Current.gpx Browse...


☒ Import All (and assign to correct day)
☐ Import Only tracks for Sep 12, 2012
☐ Select which tracks to import for Sep 12, 2012

< Back Next > Finish Cancel

- 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.

Modify Waypoint Observations - Waypoint Id: 1

Select the type of observation made at the waypoint. If multiple observations were observed select one here, additional observations can be

type filter text

- Data Model
 - Threats
 - Residential & Commercial Development
 - Agriculture & Aquaculture
 - Energy Production & Mining
 - Transportation & Service Corridors
 - Biological Resource Use
 - Human Intrusions & Disturbance
 - Natural System Modifications
 - Invasive & Other Problematic Species & Genes
 - Pollution
 - Geological Events
 - Climate Change & Severe Weather
 - Other
 - Position
 - Mammals
 - Track
 - Dung
 - Scent
 - Scrape
 - Kill
 - Carcass
 - Sighting
 - Call
 - Features
 - Fig Tree
 - Salt Lick
 - Tandiran

< Back Next > Finish Cancel

- In the data model select **Position**
- Click **Next**

Modify Waypoint Observations - Waypoint Id: 1

Enter the observation attributes for Position. Add multiple rows if required.

	Position Type
1.	Start

< Back Next > Finish Cancel

- Double click in the **Position Type** cell to activate the pull-down list
- Select **Start**
- Click **Next**

Modify Waypoint Observations - Waypoint Id: 1

Review the observation data you have entered. Use the edit button to edit observations. Press 'Next' to enter another observation. 'Finish' if the

Position [Delete](#) [Edit](#)

Position Type
Start

< Back Next > **Finish** Cancel

- Click **Finish**

Note: When entering multiple observations for a single waypoint, click Next instead of Finish and enter more observations.

Modify Waypoint Observations - Waypoint Id: 1

Review the observation data you have entered. Use the edit button to edit observations. Press 'Next' to enter another observation. 'Finish' if the observations are complete.

Position

Delete

Edit

Position Type	
Start	

Sighting - Mammals

Delete

Edit

Species	Number of Animals Seen	Number of Adult Females Seen	Number of Adult Males Seen	Number of Young Seen	
African Elephant	2.0	1.0		1.0	

< Back

Next >

Finish

Cancel

Completing the Observations

Now, it is time to enter the remaining observations into SMART. Using your field notes or the following table complete the observations for each of the 8 waypoints.

Waypoint #	Observation(s)
1	* Position - Start
2	* Elephant Track - width 450mm, length 460mm, number animals seen 1
3	* Salt Lick - Land based, length 7m, width 3m, 4 elephants at saltlick, not abandoned or dried out
4	* Gathering Terrestrial Plants - NTFP Seen - Honey, * Type of people seen - local people, number seen 2, unknown, no dogs
5	* Cheetah Carcass, natural death, male juvenile, recent carcass * Gazelle killed by a cheetah
6	* Position - Rest * Logging - Wood Species Seen (Other), Number of trees 25 * 10 Local people seen
7	* Agriculture - 2ha of Land planted with banana, * 4 local people confronted and issued a written warning
8	* Position - End

If you have used the sample table the observations should look similar to the following image. (Positions and times will be different of course, but the Observation column should be identical.)
If you have entered in your own observations the list will be different.

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

<End of Module 4 - Data Collection>

Module 5 – Queries and Summaries

Objective:

This Training Module will introduce you to the Queries Perspective in SMART. This highly configurable and dynamic aspect of SMART is a powerful tool that lets the user perform ad-hoc analysis in a configurable and intuitive manner. In this training module we will look at the following functionality:

- ***Creating a Simple Query Using Patrol Filters***
- ***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***

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

- **Patrol Query** - Returns the patrols that were involved in the particular query. No observation information is retrieved from the database.
- **Observation Query** - Returns the observations that were involved in the particular query.

Summary

A summary summarizes 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

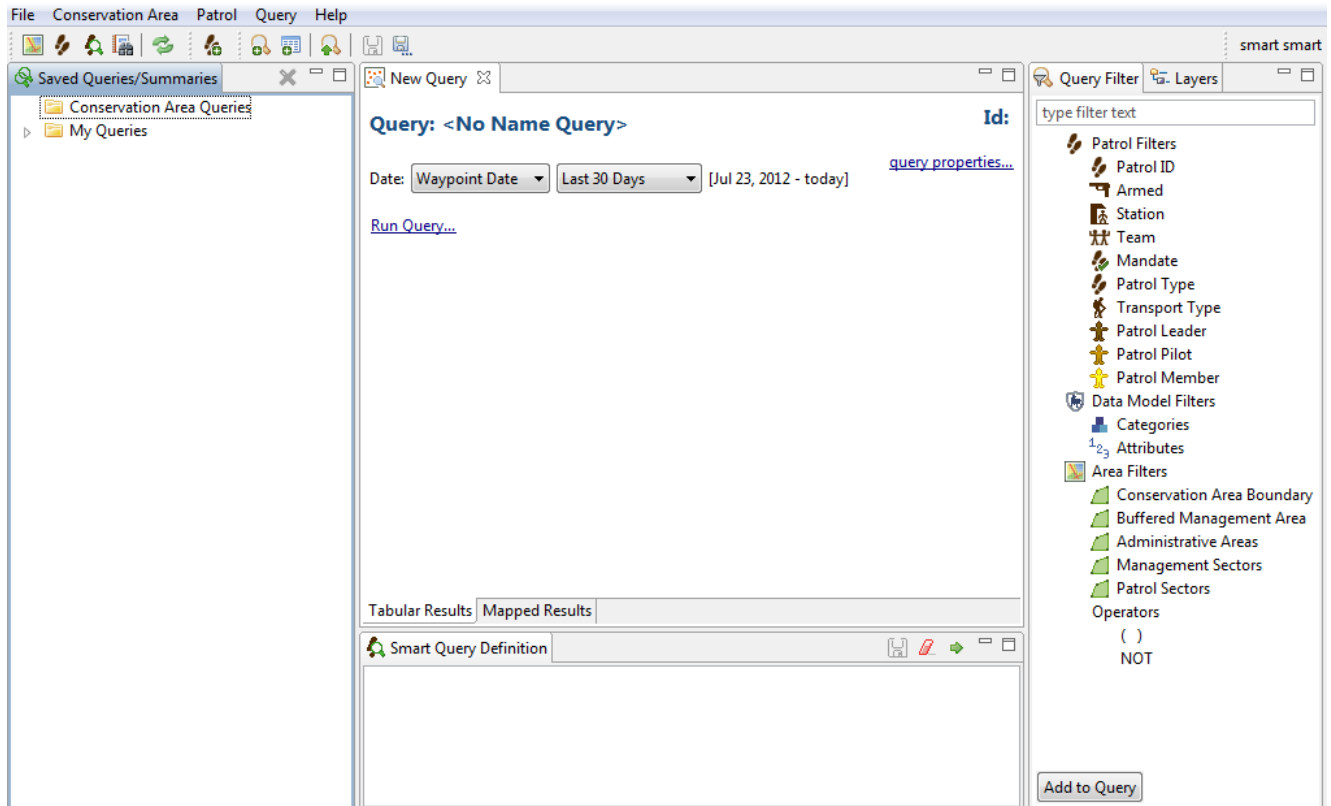
Operators are used to alter the logic of the query to allow SMART users to be able to build more complex queries.










SMART 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): <>

- To start this module log into the **SMART - SMART Conservation Area**
- Click the **Query Perspective** icon

Note: On first launch into the Query Perspective the application defaults to an observation query.

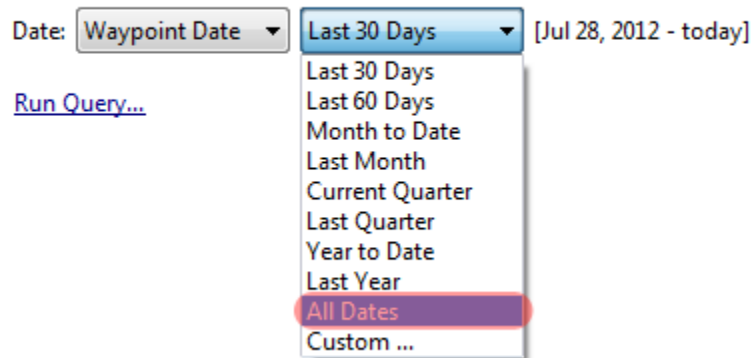


Date: <input type="text" value="Waypoint Date"/> <input type="text" value="Last 30 Days"/>	Filters the date of the query
Query: <No Name Query>	Used to change the name of the query
query properties...	Changes the name of the query. Filters the fields returned in the query results
<input type="button" value="Tabular Results"/> <input type="button" value="Mapped Results"/>	Switches between tabular results and mapping results
 Saved Queries/Summaries  Conservation Area Queries  My Queries	Folders of saved queries
 Patrol Filters	Used to filter the results based on patrol information
 Data Model Filters	Used to filter the results based on categories and attributes in the data model
 Area Filters	Used to filter the results based on the spatial boundaries of the Conservation Area
Operators () NOT	Operators of NOT and Brackets () used to change the logic of the query
Run Query... & 	Launches the query
	Clears the query
	Saves the query

Creating a Simple Observation Query Using Patrol Filters

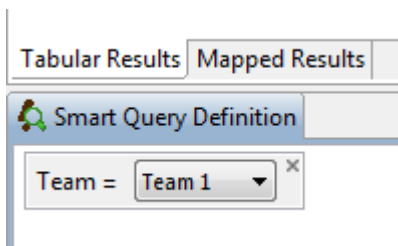
For this example, you will build a simple query to extract which observations were made by a specific team.

Query: <No Name Query>

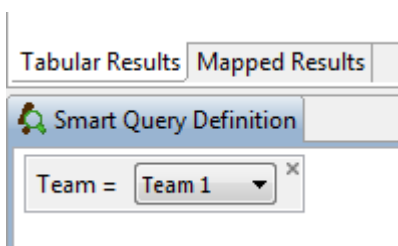


- Change the date setting to **All Dates**

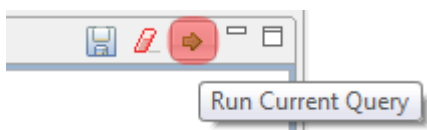
*Note: The default for the query dates are for the last 30 days. For these exercises you should change the setting to **All Dates** unless instructed otherwise.*



- To begin building the query, double-click **Team** under the patrol Filters



- From the drop down list select **Team 1**

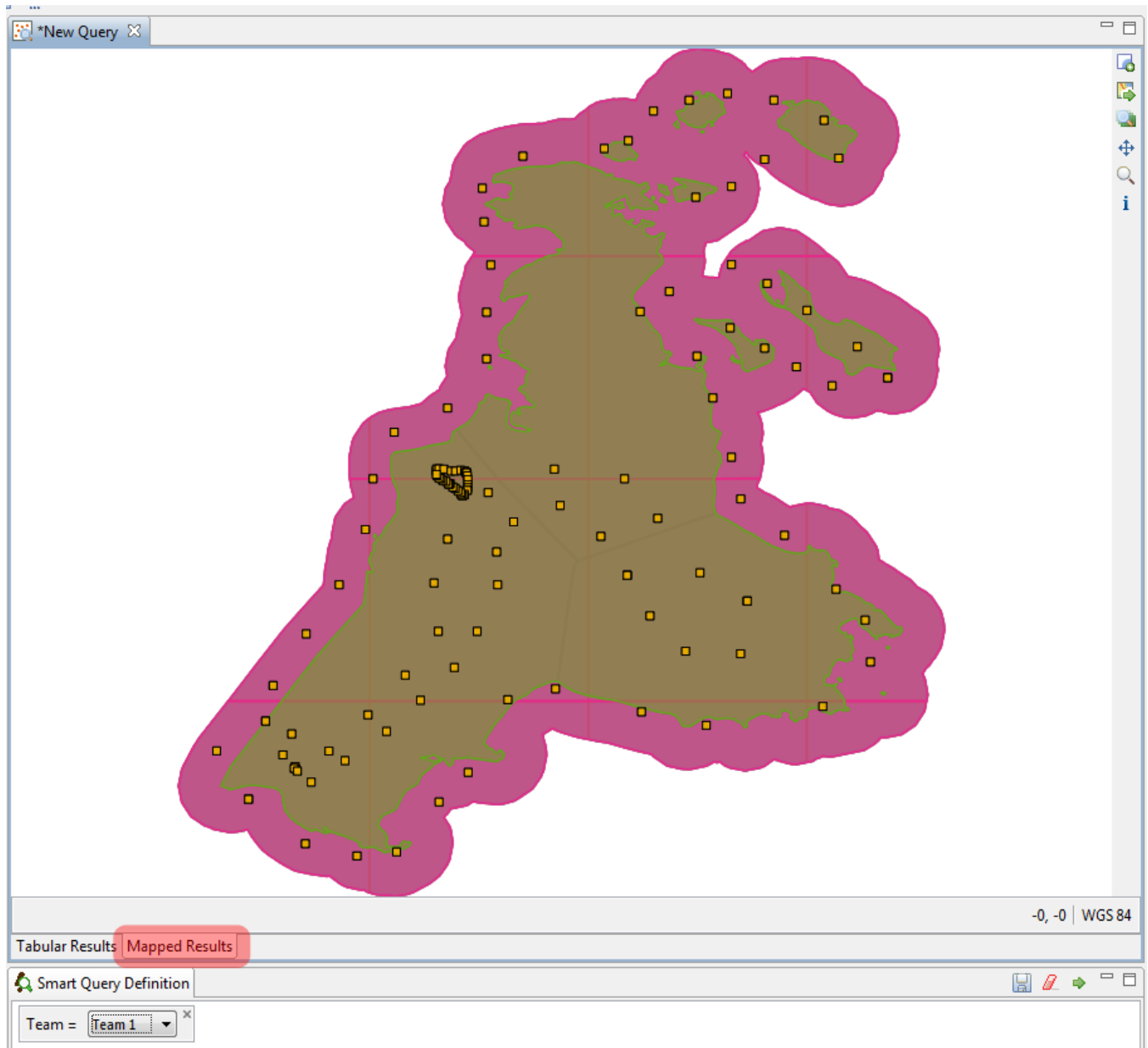


- In the lower right of the query window, click the green arrow icon **Run Current Query**

The amount of time required to return query results will depend on the complexity of the query and the number of observations in the database. After the processing has completed, SMART will return the results.

[illegible]

SMART queries can be viewed in table form or in a mapping window.



- To switch over to the mapped results, click the **Mapped Results** tab

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

Naming Queries

There are three different ways to name a query:

- Enter a name into the main screen
- Use the query properties
- Save As ...

Main Screen Name Change

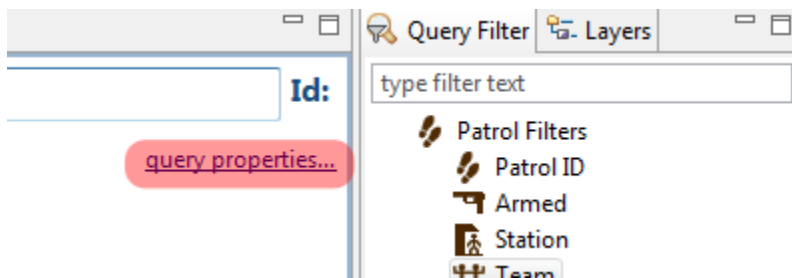
Query:

Date:

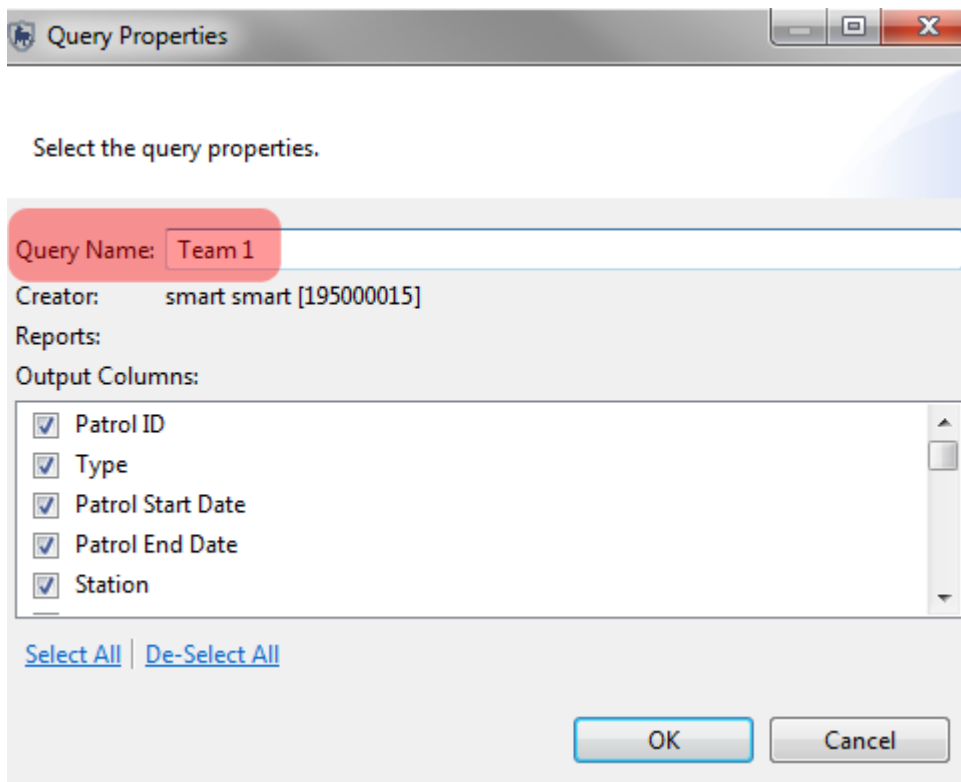
Number of Records: 130

- Click inside the name box of **<No Name Query>**
- Type in **Team 1**
- Click the **Enter** key on your keyboard

Query Properties

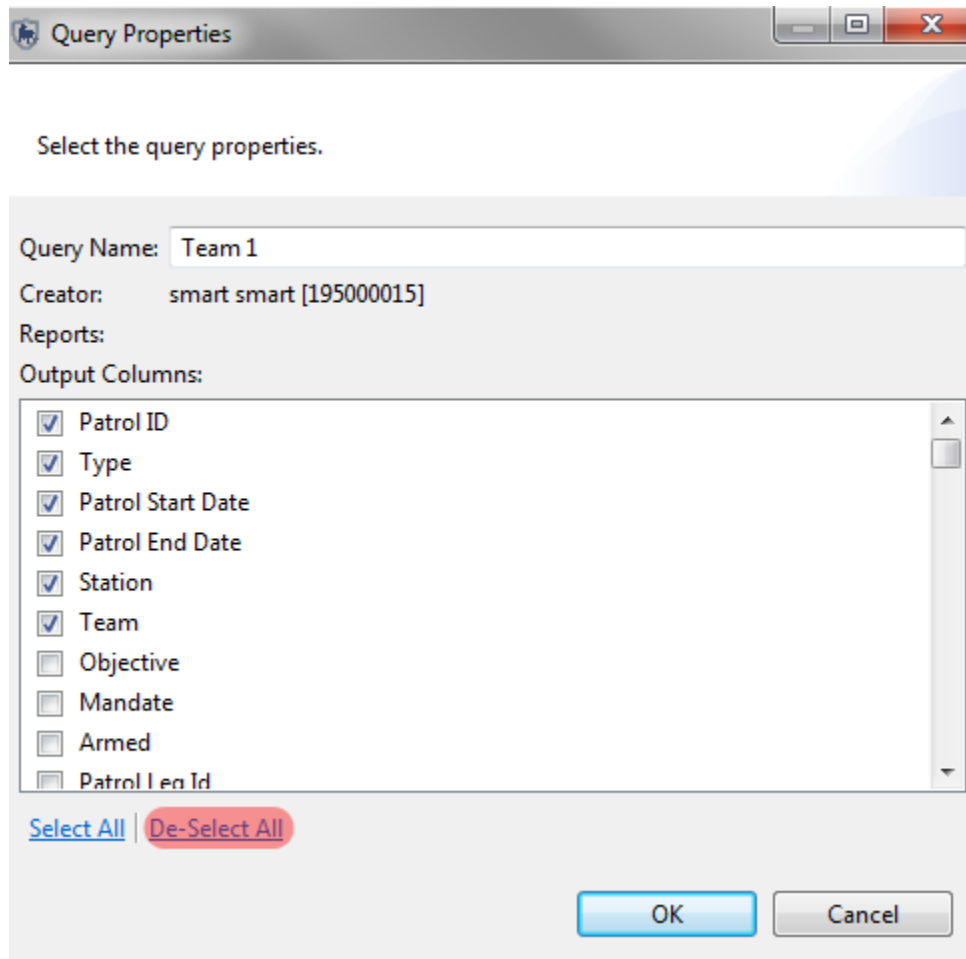


- Click **query properties ...**



- Type in **Team 1** into the Query Name: text box
- Click **OK**

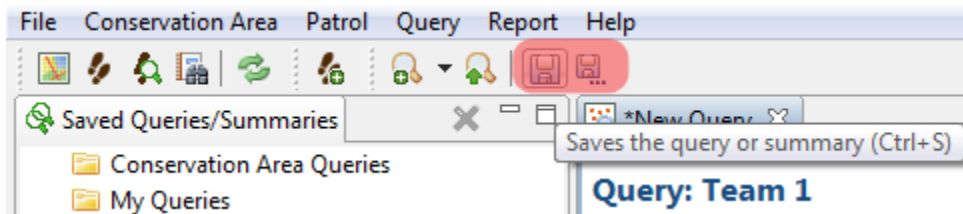
In the Query Properties window you can select which fields are returned from the query results.



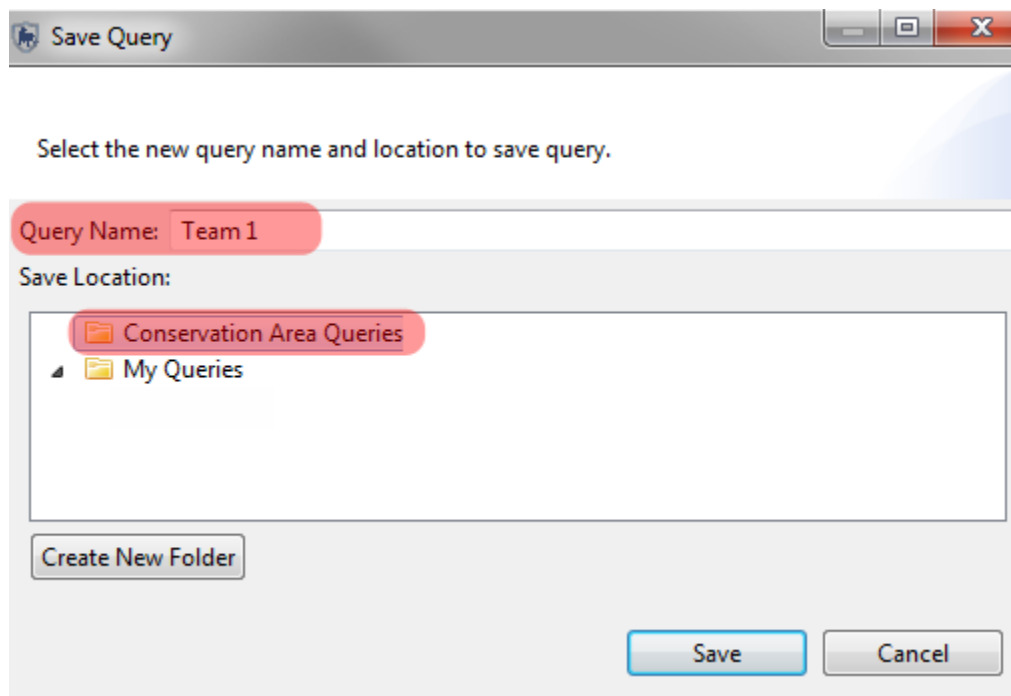
- Resize the window to show the fields Armed and Patrol Leg ID
- Click **De-Select All**
- Click the check-boxes for:
 - **Patrol ID**
 - **Type**
 - **Patrol Start Date**
 - **Patrol End Date**
 - **Station**
 - **Team**
- Click **OK**

Save and Save As

The third option to name a query is one that will also allow you to save the query at the same time. If a name has not been assigned then the best option to save would be to use Save As. This will allow for a name to be chosen and the query to be saved at the same time.

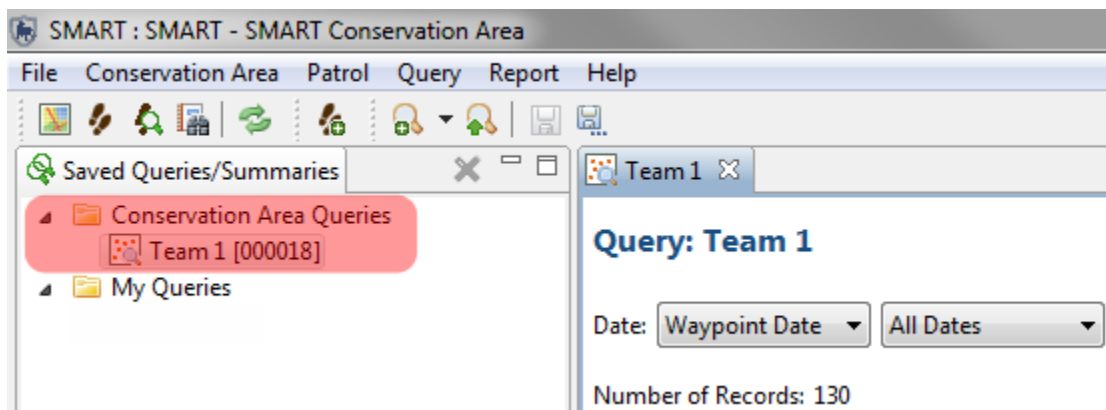


- Click the **Save As** icon



- Enter in **Team 1** into the Query Name box
- Select **Conservation Area Queries** as the location of the saved query
- Click **Save**

The query named Team 1 will now appear under the folder Conservation Area Queries in the Saved Queries/Summaries window.



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 6).

Creating Compound Queries using Patrol Filters

In the previous example, you extracted all observations made by Team 1. For the next example, you will create a compound query to further filter the results by finding only the patrols by Team 1 that took place on the ground.

Query: Team 1

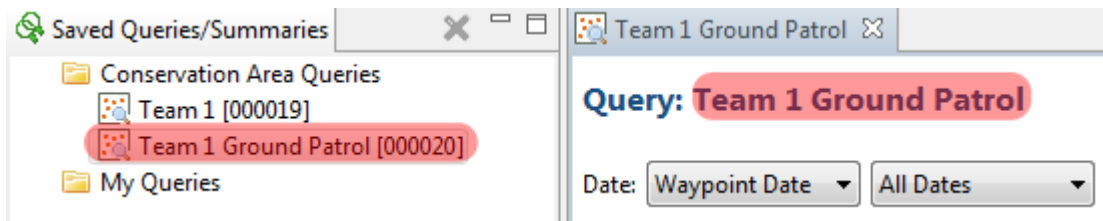
Date:

Number of Records: 33

Patrol ID	Type	Patrol Start Date
-----------	------	-------------------

Note: The number of results returned will have dropped from 130 down to 33.

After creating and running this new query you will need to assign a new name and save the query.

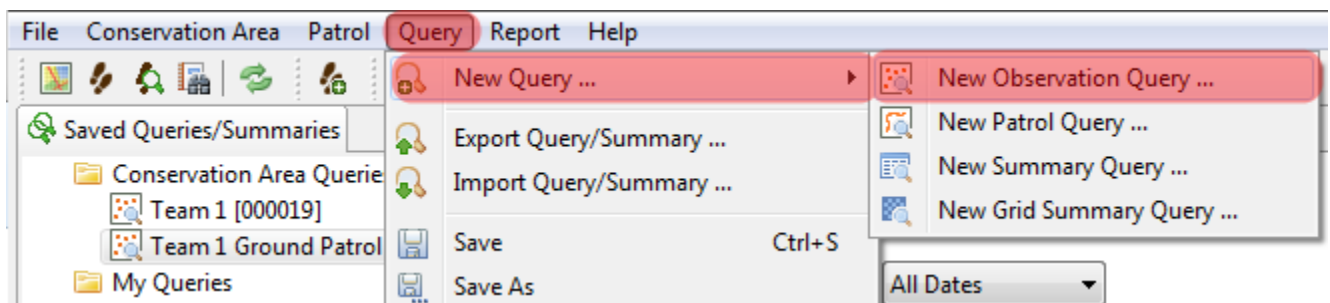


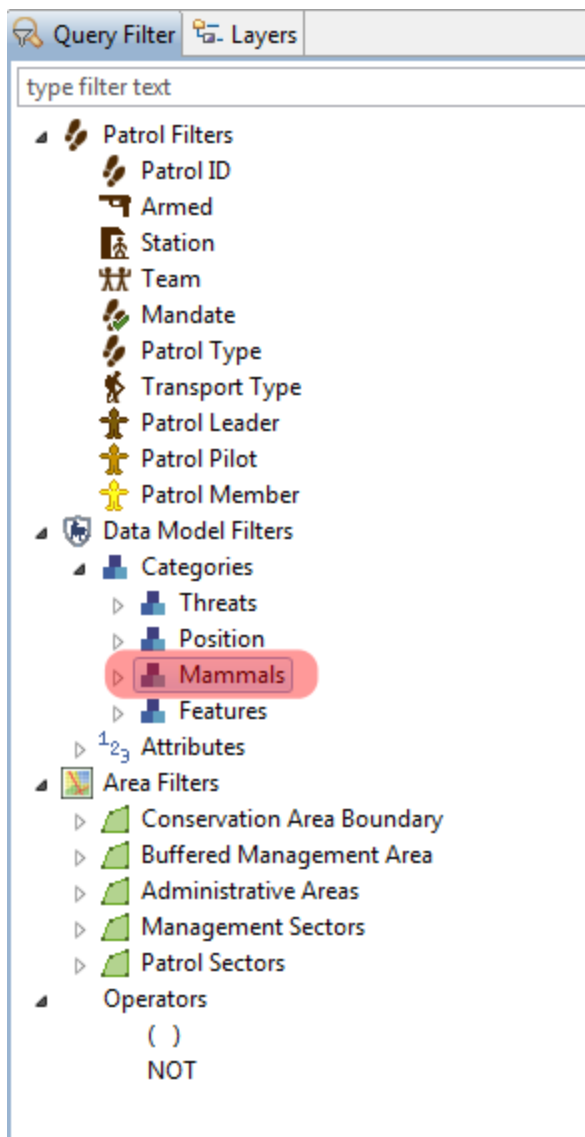
- Rename the query to **Team 1 Ground Patrol**
- Save the query to the **Conservation Area Queries** folder

Creating a Simple 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.

This next query will return all observations that were recorded under the main category of Mammals.





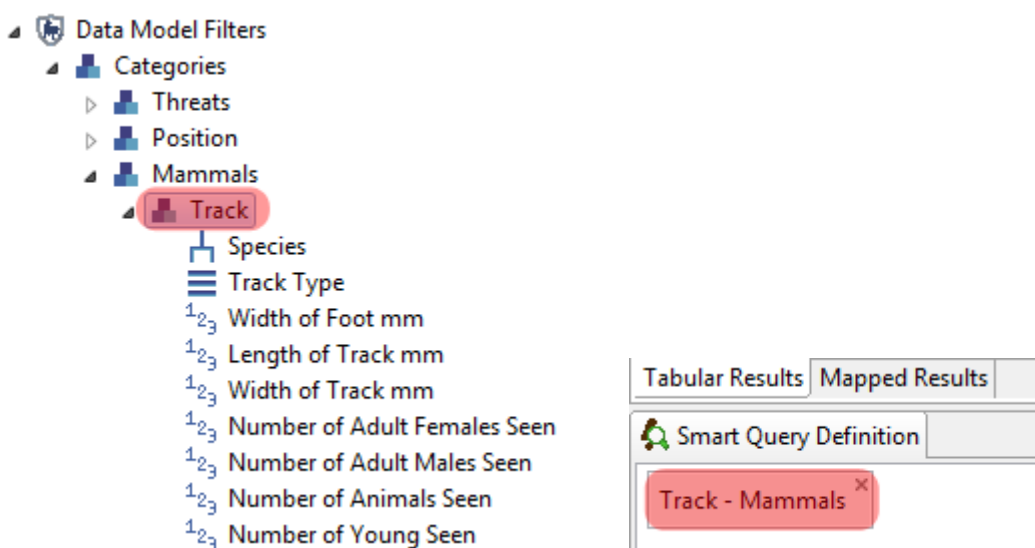
- To start a new Observation Query select **New Observation Query** from the menu
- Reset the Date to **All Dates**
- Double-Click on **Data Model Filters - Mammals**
- Run the query

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Clearing Queries

- Click the Clear the Query icon  to remove the previous query

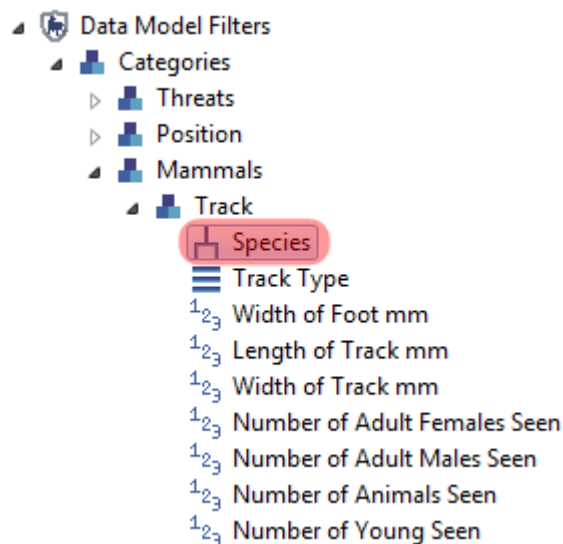
Now you will rebuild the query and choose the sub-category of Track to select all the Track Observations



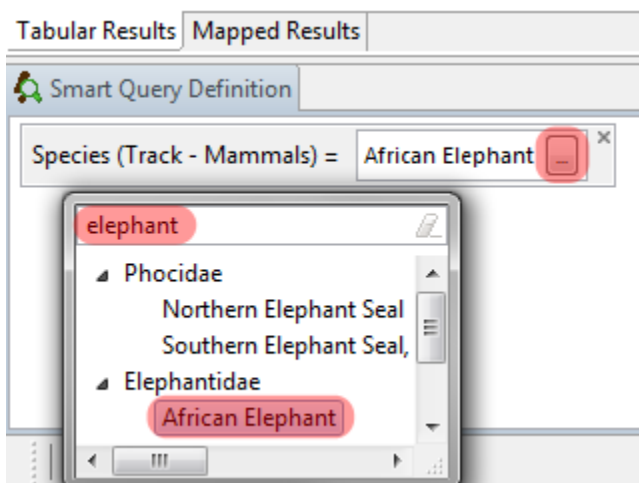
- Double-click **Track**
- Run the query
- Verify that the results have changed and the number of observations is now 24

Using Category Attributes

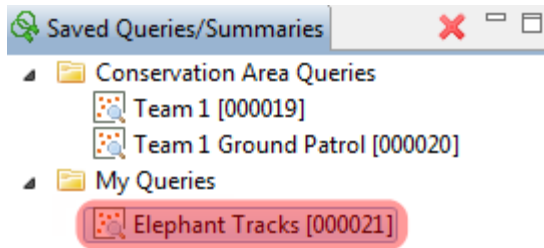
If an attribute of a category is chosen, the results returned will be limited to that specific category or sub-category even though that particular attribute is used to record other observations. For this example you will build a query to extract only the tracks of an African Elephant.



- Click the Clear the Query icon  to remove the previous query
- Double-click the attribute **Species** under the Track category



- In the Smart Query Definition window click the **species selector icon**
- Type **elephant** into the filter
- Select **African Elephant**
- Select **All Dates** from the Date filter
- Run the query
- Verify that the results have changed and the number of observations is now 11

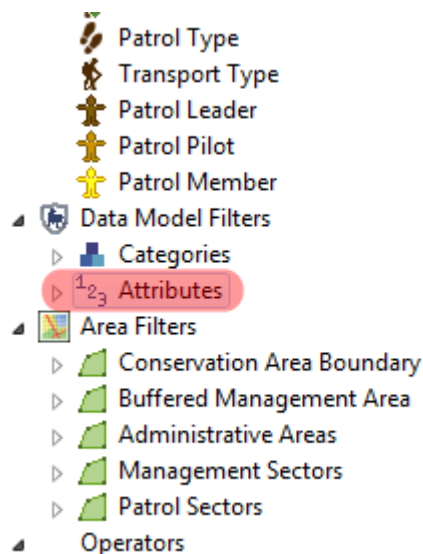


- Save the query under the folder of **My Queries** as **Elephant Tracks**

Using Attributes

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 African Elephants were used in the species list.



- Create a new Observation query
- Under the Data Model - Attributes scroll down and select **Species**
- Double-click **Species** or click **Add to Query**

Tabular Results Mapped Results

Smart Query Definition

Species = African Elephant

- Select **African Elephant** from the species tree
- Run the query
- In the query properties **De-Select All** then select
 - **Patrol ID**
 - **Observation Category 0**
 - **Observation Category 1**
- Click **OK**

The fields of the returned results can be sorted to increase readability.

Query: Elephant Observations

Date: Waypoint Date All Dates

Number of Records: 44

Patrol ID	Observation Category 0	Observation Category 1
SMART_000007	Threats	Biological Resource Use
SMART_000007	Threats	Biological Resource Use
SMART_000006	Mammals	Call
SMART_000003	Mammals	Carcass
SMART_000001	Mammals	Carcass
SMART_000006	Mammals	Carcass
SMART_000006	Mammals	Carcass
SMART_000006	Mammals	Carcass
SMART_000006	Mammals	Carcass
SMART_000004	Mammals	Carcass
SMART_000007	Mammals	Carcass
SMART_000007	Mammals	Carcass
SMART_000007	Mammals	Carcass
SMART_000007	Mammals	Carcass
SMART_000003	Mammals	Dung

Tabular Results Mapped Results

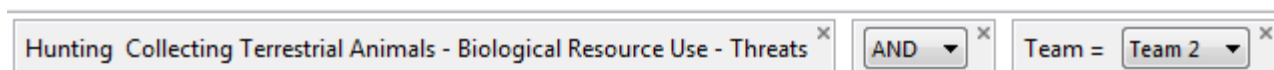
Smart Query Definition

Species = African Elephant

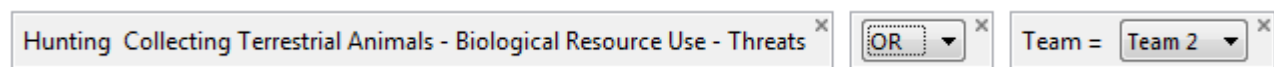
- Sort the field Observation Category 1 by clicking on the **field name**

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.



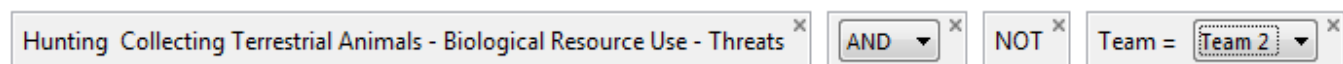
This query will return all of the Hunting threats observed by Team 2



This query will return all Hunting threats as well as all observations recorded by Team 2



This query will return all of the Hunting threats observed by Team 2 or Team 1



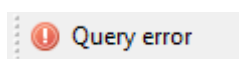
This query will return all of the Hunting threats observed by any team other than Team 2

Note: Once components in the Smart Query Window have been included, they can be repositioned or removed by clicking the “x” in the upper right of the feature.

- [Save the query as African Elephant Observations by team under My Queries](#)

Invalid Query

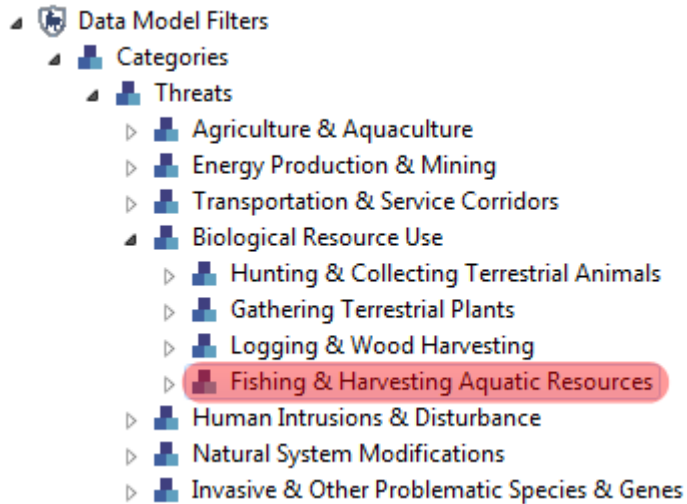
SMART will only allow valid queries to be run. If a query is incomplete or invalid, the green Run Current Query icon will be unavailable and there will be a Query error warning at the bottom of the screen.



Creating Queries using Area Filters

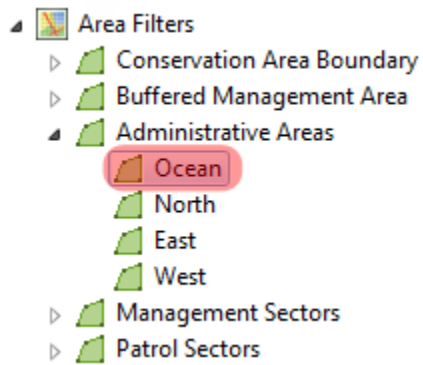
Area filters allow for results to be filtered using the administrative boundaries associated with the Conservation Area.

For this example, you will build an observation query to extract all the Fishing Harvesting Aquatic Resources in the Administrative Area of Ocean.

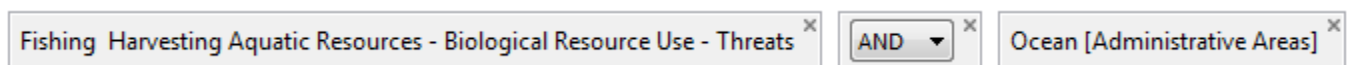


- Create new Observation Query
- Add the category of **Fishing & Harvesting Aquatic Resources** to the query window
- Select **All Dates** from the Date filter
- Run the query and view the results in the Mapped Results tab





- Now add the category of Area Filters - Administrative Area - **Ocean** to the query window



- Run the query and view the results in the Mapped Results tab

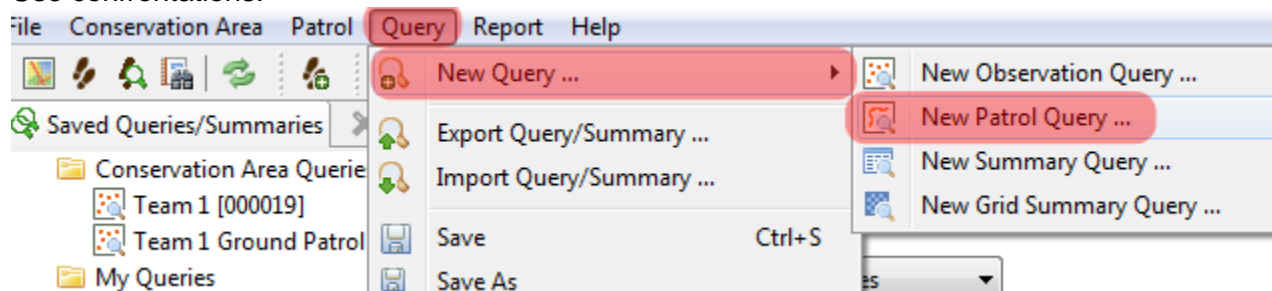
After the Area Filter has been added to the query, the results will be for observations within that selected area.



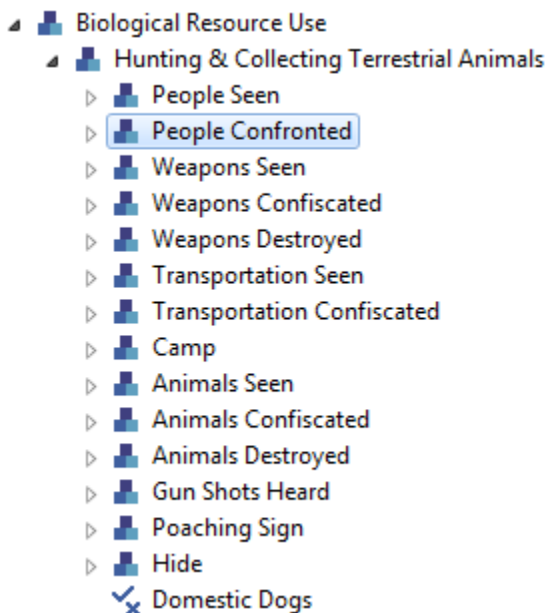
Patrol Queries

Up to this point, all queries have been Observation Queries and the results returned are of the individual observations. 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 Biological Resource Use confrontations.

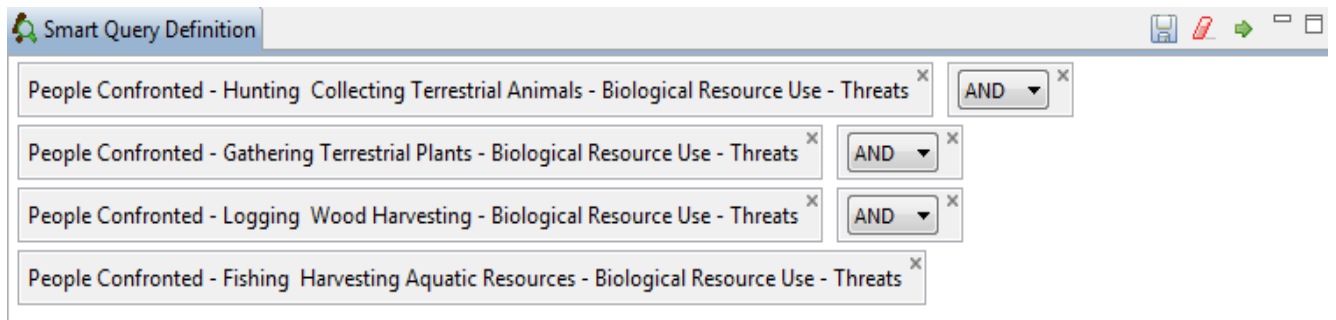


- Select **New Patrol Query** from the menu
- Select **All Dates** from the Date filter
- Name the query **People Confrontations**

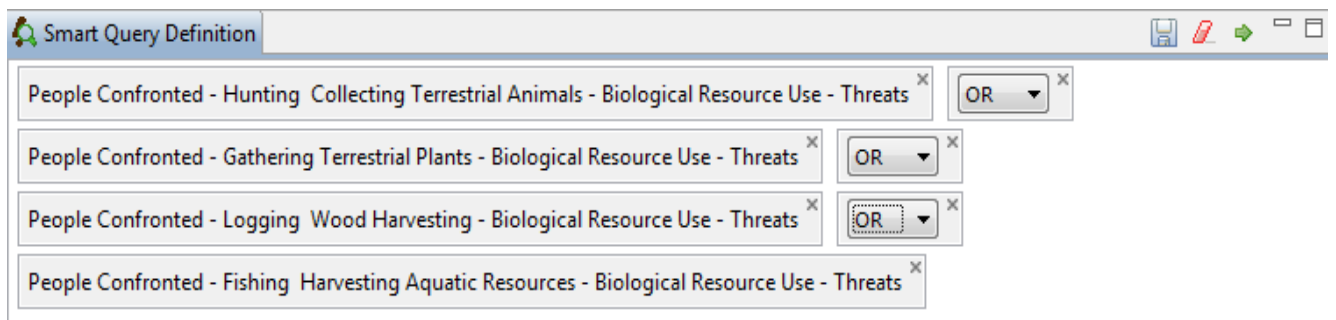


- Add Categories - Threats - Biologic Resource Use - Hunting & Collecting Terrestrial Animals - **People Confronted** to the query window
- Add Categories - Threats - Biologic Resource Use - Gathering Terrestrial Plant - **People Confronted** to the query window
- Add Categories - Threats - Biologic Resource Use - Logging & Wood Harvesting - **People Confronted** to the query window
- Add Categories - Threats - Biologic Resource Use - Fishing & Harvesting Aquatic - **People Confronted** to the query window

After the four categories have been loaded into the Smart Query Definition window, your query should look like the following screenshot.



The logic of having the Operators all be AND will not return the desired results. To get all of the People Confronted results you will need to change the Operators to OR.



- Change the three (3) Operators to **OR**
- Run query
- View the **Tabular Results** then switch to the **Mapped Results** tab

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.

Query Properties

Select the query properties.

Query Name:

Creator: smart smart [195000015]

Reports:

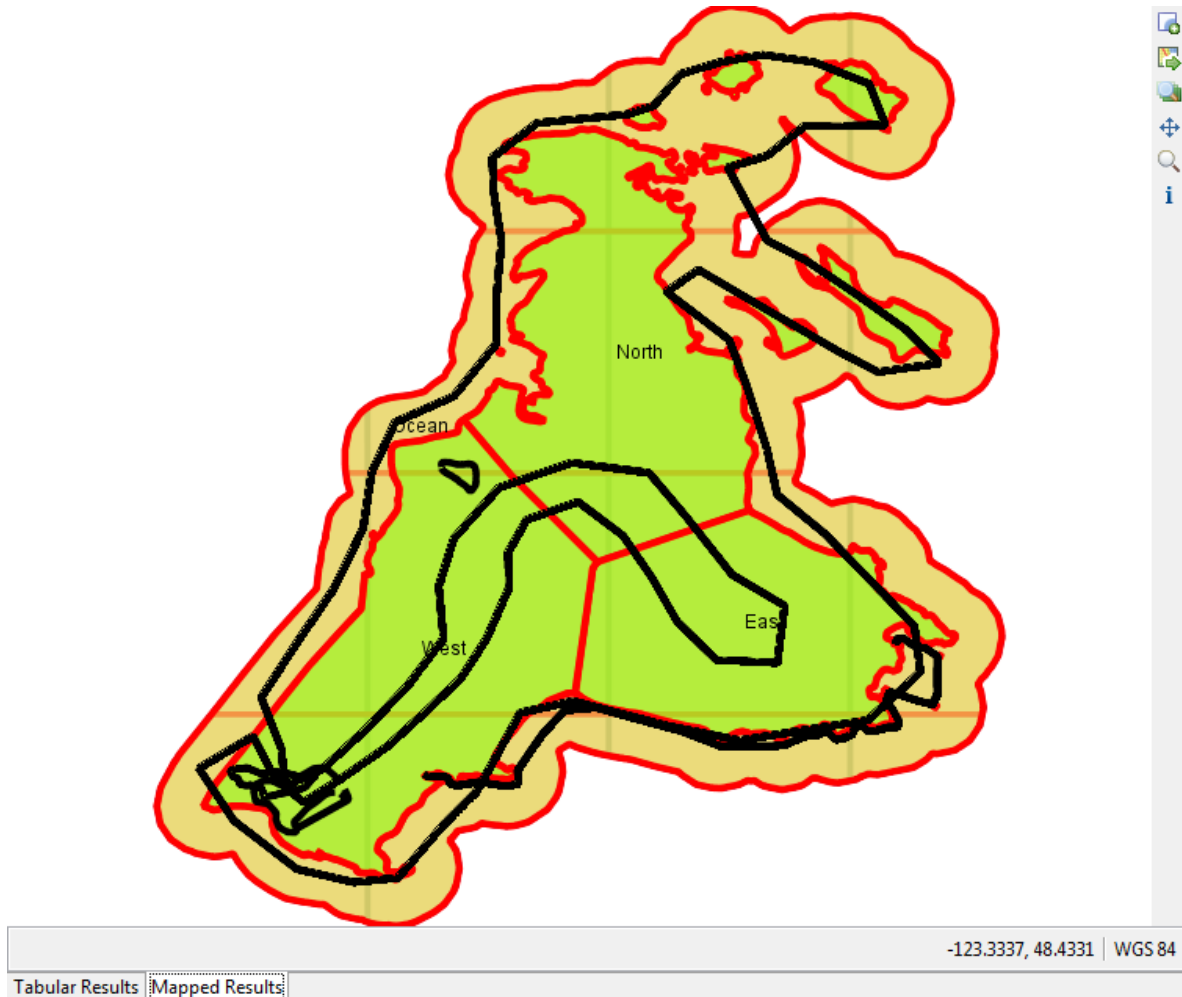
Output Columns:

- ☒ Patrol ID
- ☒ Type
- ☒ Patrol Start Date
- ☒ Patrol End Date
- ☒ Station
- ☒ Team
- ☒ Objective
- ☒ Mandate
- ☒ Armed
- ☒ Patrol Leg Id
- ☒ Leader
- ☒ Pilot
- ☒ Patrol Leg Start Date
- ☒ Patrol Leg End Date
- ☒ Patrol Transport Type

[Select All](#) | [De-Select All](#)

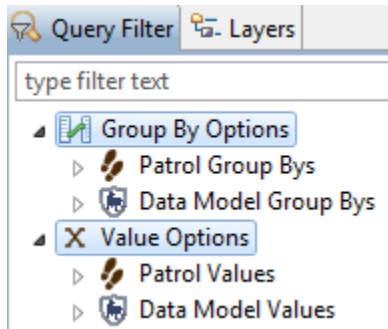
In the Mapped Results view the Tracks of the various patrols are returned and mapped. No waypoint information is returned.

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.



Summaries

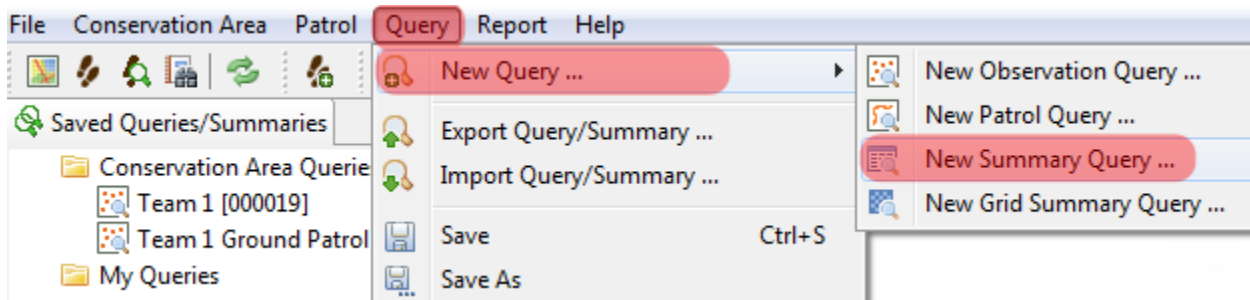
Summaries are built placing Value Options and Group By Options into the Smart Query Definition windows. The Group By Options are used to provide an aggregation of the Value Options.



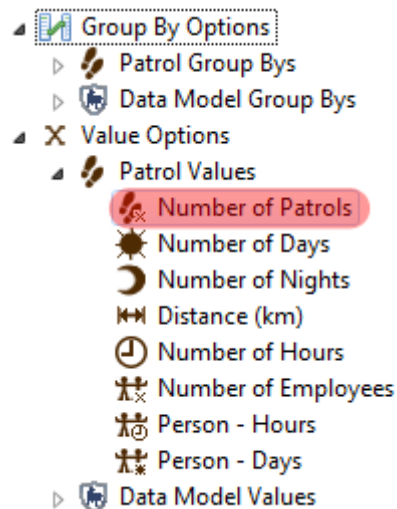
The simplest of Summaries can be a single Value option with no Group By Options, and there is no end to how complex a summary can be. However, some combinations of Values and Group Bys are not permissible and SMART will not allow the summary to be run until the error is resolved.

Simple Patrol Summaries

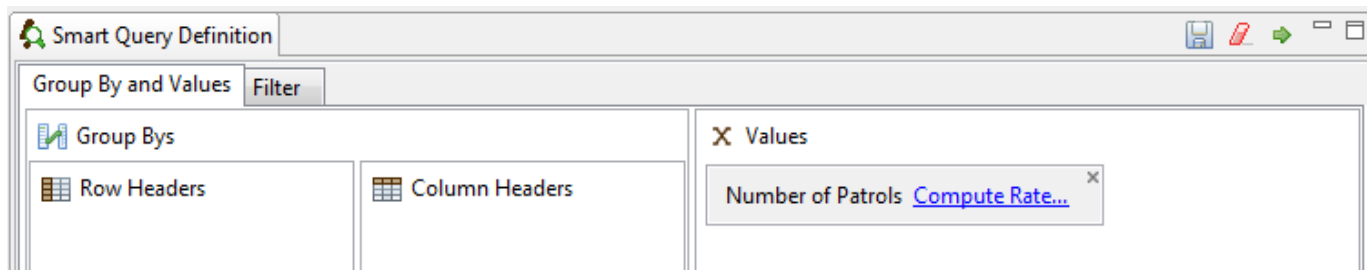
For this example, you will build a simple summary to calculate the total number of patrols entered into the system for this Conservation Area.



- From the menu select **New Summary Query**
- Set the Date filter to **All Dates**



- Add Value Options - Patrol Values - **Number of Patrols** to the query



- Run the query

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

Summary: <No Name Summary>

Date: Waypoint Date ▼ All Dates ▼

Number of Patrols
7.0

X Values

Number of Patrols [Compute Rate...](#) X

Distance (km) [Compute Rate...](#) X

Distance (km) [Compute Rate...](#) X

- 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.

Encounter Rate

Encounter Rate

Select the encounter rate to compute

Distance (km) ▼

Distance (km)

Number of Hours

Number of Days

Person - Days

Person - Hours

Number of Patrols

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

The results of this summary shows the total number of patrols, the total distance travelled by those patrols and the average distance travelled per patrol.

Summary: <No Name Summary>

Date:

Number of Patrols	Distance (km)	Distance (km) per Number of Patrols
7.0	305.7941589355469	43.68487984793527

The following screenshot is for a basic Patrol Summary for the Conservation Area. This example does not include any Observation Values, Computed Rates, or Group Bys.

Date: Waypoint Date All Dates [summary properties...](#)

Number of Patrols	Number of Days	Number of Night:	Distance (km)	Number of Hours	Number of Employee	Person - Hours	Person - Days
7.0	11.0	4.0	305.7941589355469	288.99666666664	10.0	1355.98388888...	78.0

Smart Query Definition Save Edit Run Close

Group By and Values Filter

Group Bys

Row Headers

Column Headers

Values

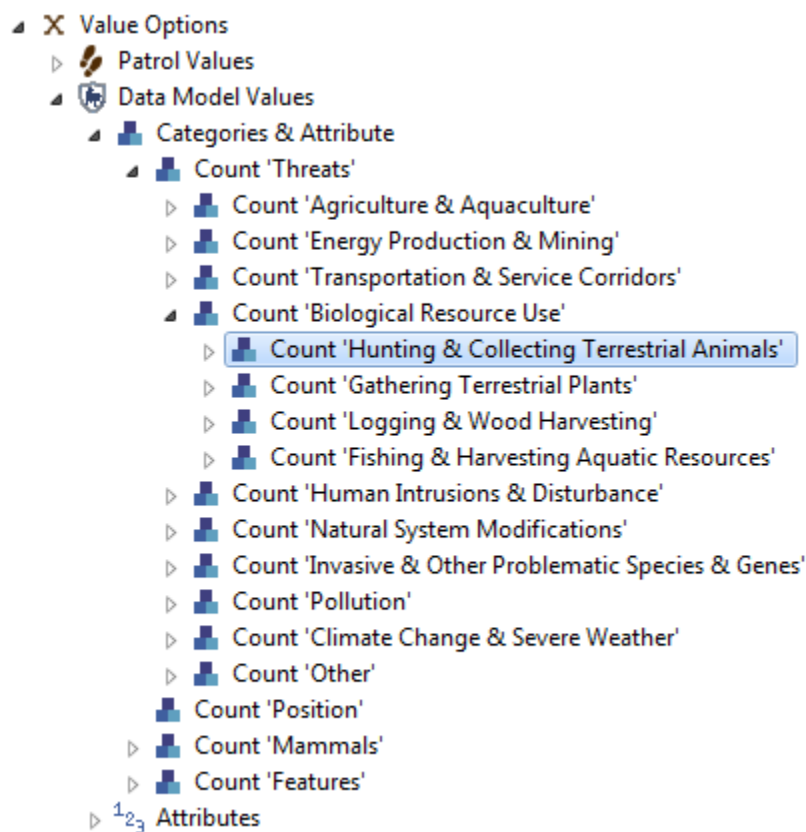
- Number of Patrols [Compute Rate...](#)
- Number of Days [Compute Rate...](#)
- Number of Nights [Compute Rate...](#)
- Distance (km) [Compute Rate...](#)
- Number of Hours [Compute Rate...](#)
- Number of Employees [Compute Rate...](#)
- Person - Hours [Compute Rate...](#)
- Person - Days [Compute Rate...](#)

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 & Collecting Terrestrial Animals.

- [Clear the current Summary](#)
- [Add Data Model Values Count 'Hunting & Collecting Terrestrial Animals'](#)



Summary results for the total number of observations for Hunting & Collecting Terrestrial Animals:

Date: Waypoint Date All Dates [summary properties...](#)

Count Hunting & Collecting Terrestrial Animals
57.0

Smart Query Definition Save Print Help Close

Group By and Values Filter

Group Bys

Row Headers

Column Headers

Values

Count Hunting Collecting Terrestrial Animals - Biological Resource Use - Threats [Compute Rate...](#)

By bringing in a combination of observation values, patrol values and computed rates, SMART can calculate the number of Hunting & Collecting observations per person day.

Smart Query Definition Save Print Help Close

Group By and Values Filter

Group Bys

Row Headers

Column Headers

Values

Count Hunting Collecting Terrestrial Animals - Biological Resource Use - Threats [Compute Rate...](#)

Person - Days [Compute Rate...](#)

Count Hunting Collecting Terrestrial Animals - Biological Resource Use - Threats per Person - Days [Change Rate...](#)

- From the Patrol Values add **Person - Days** to the query
- Add **Count Hunting & Collecting Terrestrial Animals** for a second time
- Click Compute Rate on the **Count Hunting & Collecting Terrestrial Animals**
- Select **Person - Days**
- Click **OK**
- Run the query

SMART's computed results show less than one Hunting & Collecting observation is recorded per person day (0.73 observations per person day).

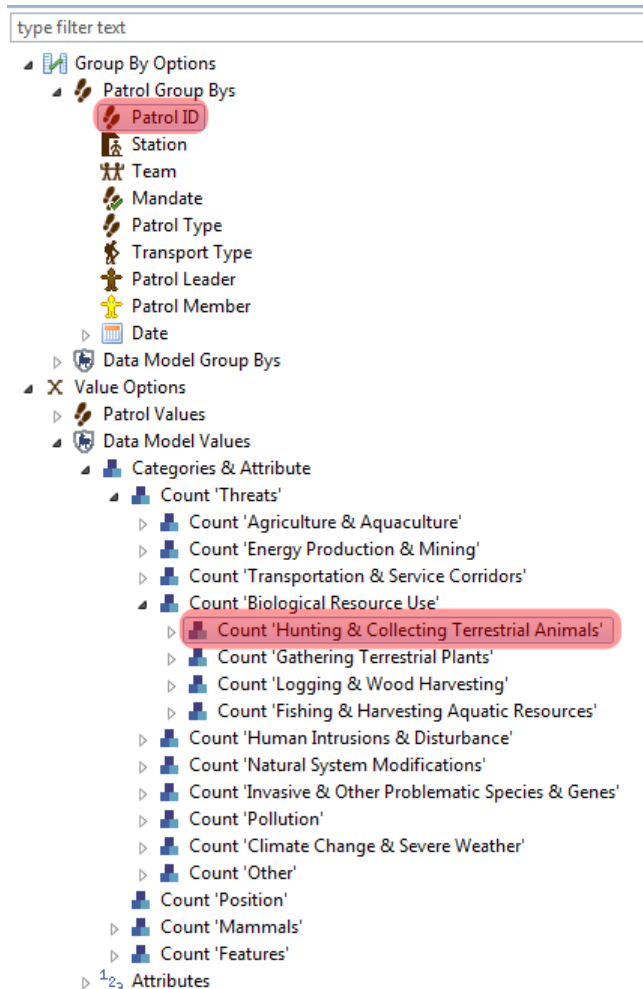
Date: Waypoint Date All Dates [summary properties...](#)

Count Hunting & Collecting Terrestrial Animals	Person - Days	Count Hunting & Collecting Terrestrial Animals per Person - Days
57.0	78.0	0.7307692307692307

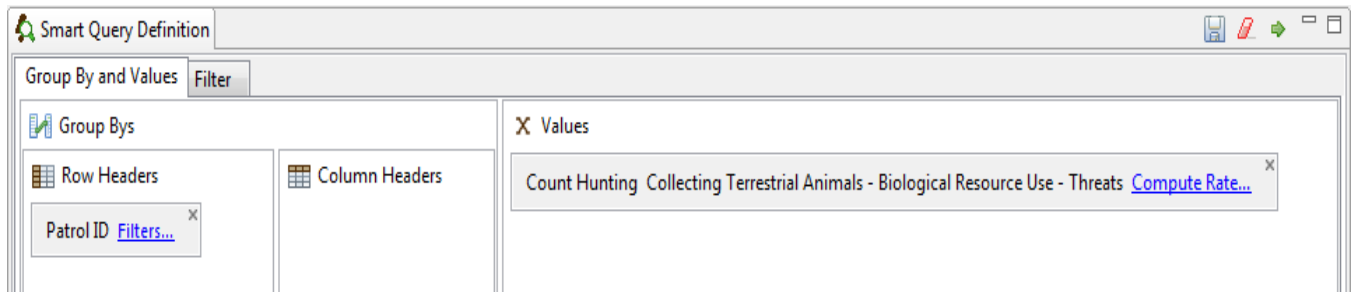
Group By Options

The previous summary examples have all been summaries without any Group By Options. For the next example you will build on the previous summary a simple summary using Group By Options.

For this example you will be using the Hunting & Collecting Terrestrial Animals Values and a Group By of Patrol ID. This will return the number of Hunting & Collecting observations recorded by each patrol.



- Clear the query
- Add to the query **Count 'Hunting & Collecting Terrestrial Animals'** from the Data Model Values
- Add to the query a Patrol Group Bys of **Patrol ID**



- Run the query

The following summary results show the distribution of the 57 Hunting & Collecting observations by patrol ID.

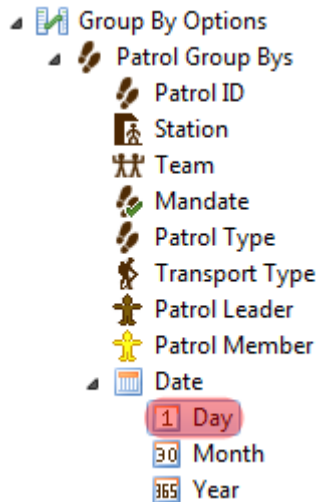
Summary: <No Name Summary>

Date: Waypoint Date ▾ All Dates ▾

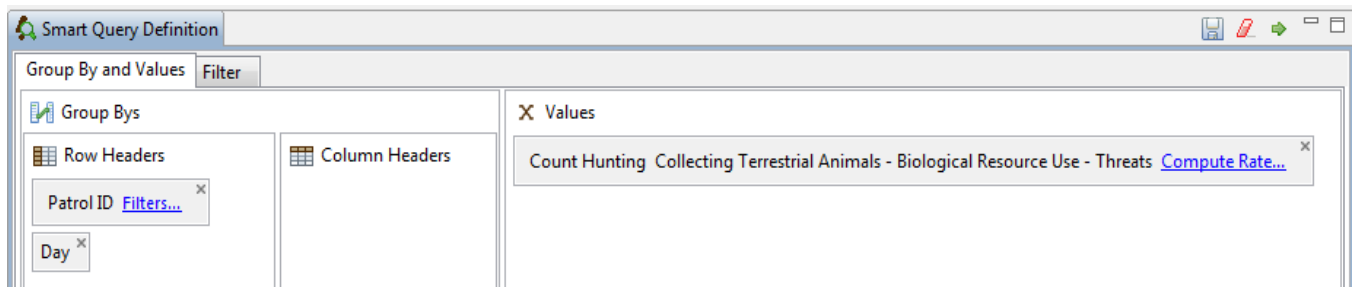
Count Hunting & Collecting Terrestrial Animals	
SMART_000001	6.0
SMART_000002	
SMART_000003	10.0
SMART_000004	5.0
SMART_000005	11.0
SMART_000006	8.0
SMART_000007	17.0

Group Bys using Dates

Using the same summary as before, you will now add a Date Group By Option. This will allow SMART to calculate how many observations were reported by each patrol and on which date.



- Add Group By - Patrol Group Bys - Date - **Day** to the query



- Run the query

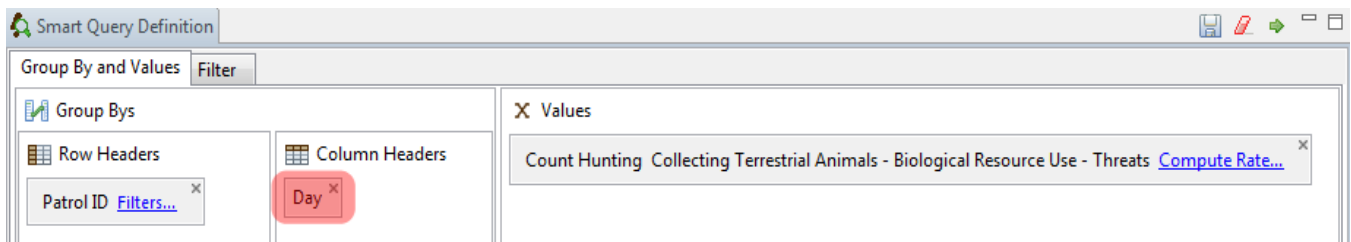
Note: The list will be quite long and you will need to scroll down through the list and see the recorded results.

Summary: <No Name Summary>

Date: Waypoint Date All Dates

		Count Hunting &
SMART_000006	2012-08-28	
SMART_000007	2012-07-16	
SMART_000007	2012-07-17	
SMART_000007	2012-07-18	
SMART_000007	2012-07-19	
SMART_000007	2012-07-20	
SMART_000007	2012-07-21	
SMART_000007	2012-07-22	3.0
SMART_000007	2012-07-23	11.0
SMART_000007	2012-07-24	3.0
SMART_000007	2012-07-25	
SMART_000007	2012-07-26	
SMART_000007	2012-07-27	
SMART_000007	2012-07-28	
SMART_000007	2012-07-29	
SMART_000007	2012-07-30	

Note: The default placement for Group Bys is in the Row Headers window. This can be altered to produce a different results layout if the Column Headers is used.



- Using the mouse, left-click on the **Day** item and drag it into the **Column Header** section
- Run the query.

The base information is the same in the results; only the formatting of the table has changed.

Summary: <No Name Summary>

Id:

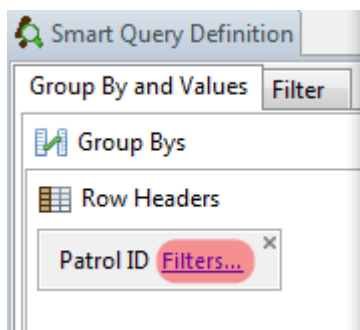
[summary properties...](#)

Date: Waypoint Date All Dates

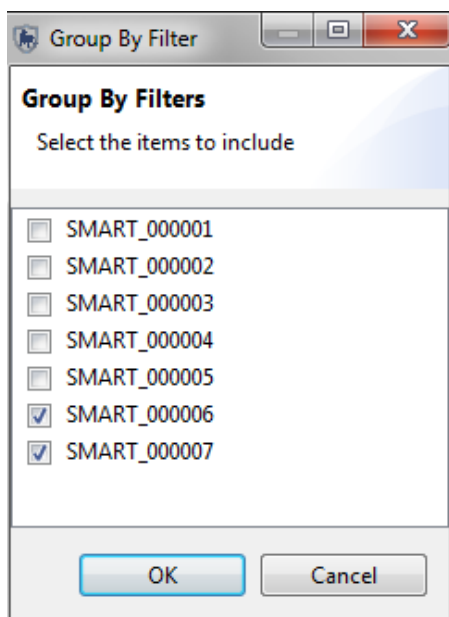
	2012-07-16	2012-07-17	2012-07-18	2012-07-19	2012-07-20	2012-07-21	2012-07-22	2012-07-23	2
	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &
SMART_000001									
SMART_000002									
SMART_000003				10.0					
SMART_000004									5
SMART_000005									1
SMART_000006	8.0								
SMART_000007							3.0	11.0	3

Group By Filters

Group By Filters provide a simple way to filter results from the summaries.



- In the Group Bys click the Patrol ID **Filters ...**



- Deselect all of the patrol except for **SMART_000006 & SMART_000007**
- Click **OK**
- Run the query

The results have now been filtered down to just these two patrols.

Summary: <No Name Summary>

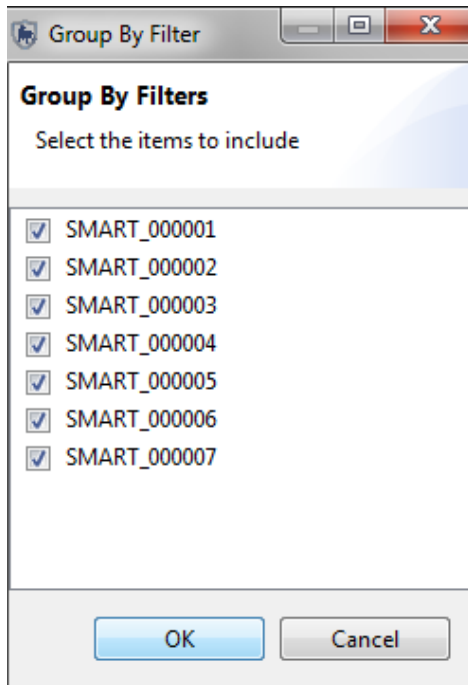
Id:

[summary properties...](#)

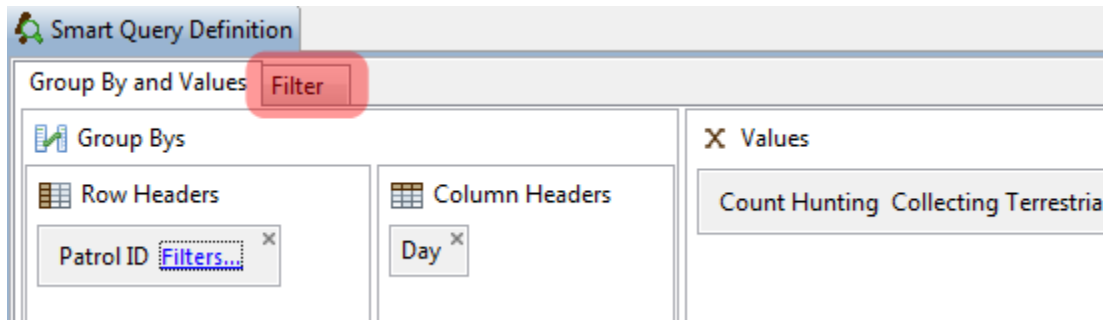
Date: Waypoint Date All Dates

	2012-07-16	2012-07-17	2012-07-18	2012-07-19	2012-07-20	2012-07-21	2012-07-22	2012-07-23	2
	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	C
SMART_000006	8.0								
SMART_000007							3.0	11.0	3

There is another way of filtering down summaries, and that is to build a query as was done in the early part of this training module.

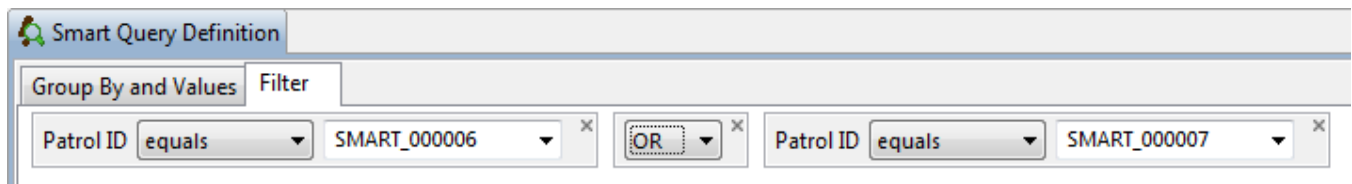


- Click on the **Patrol ID Filter**
- Select **all Patrols**
- Click **OK**



- After all of the patrols have been re-selected, click the **Filter** tab

The Summary Filter tab will open up the query builder interface. To filter out all patrols except for SMART_000006 & SMART_000007 you will need to complete a query as seen below.



- Double Click on the **Patrol ID** under Patrol Filters
- Select SMART_000006
- Double-click **Patrol ID** again to add Patrol ID **SMART_000007** to the query
- Change the operator “**AND**” to “**OR**”
- Run the summary

After the Filter Tab query has been run, the results are returned to the summary table. The information returned is almost the same as when you ran the summary using the Patrol ID filters. Using this method, however, does not filter out the rows for the non-queried patrols.

Summary: <No Name Summary>

Id:

Date: [summary properties...](#)

	2012-07-16	2012-07-17	2012-07-18	2012-07-19	2012-07-20	2012-07-21	2012-07-22	2012-07-23	2
Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	Count Hunting &	C
SMART_000001									
SMART_000002									
SMART_000003									
SMART_000004									
SMART_000005									
SMART_000006	8.0								
SMART_000007							3.0	11.0	3

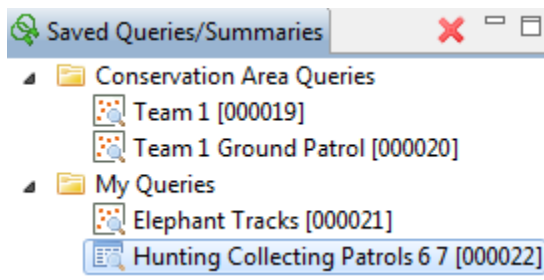
Smart Query Definition

Group By and Values Filter

Patrol ID equals SMART_000006 OR Patrol ID equals SMART_000007

Saving Summaries

Summaries are saved in the same way as queries. You will now save this last summary as “Hunting Collecting Patrols 6 7” under My Queries.



Exporting and Importing Queries and Summaries

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 (Note: Reports will be covered in Module 6).

Query and Summary Exports

Queries can be exported in one of three formats:

- **Shapefile (*.shp)** ****Only Available for Queries****
- **Comma Separated Values (*.csv)**
- **Query Definition (*.xml)**

Shapefile Export ****Only Available for Queries****

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.

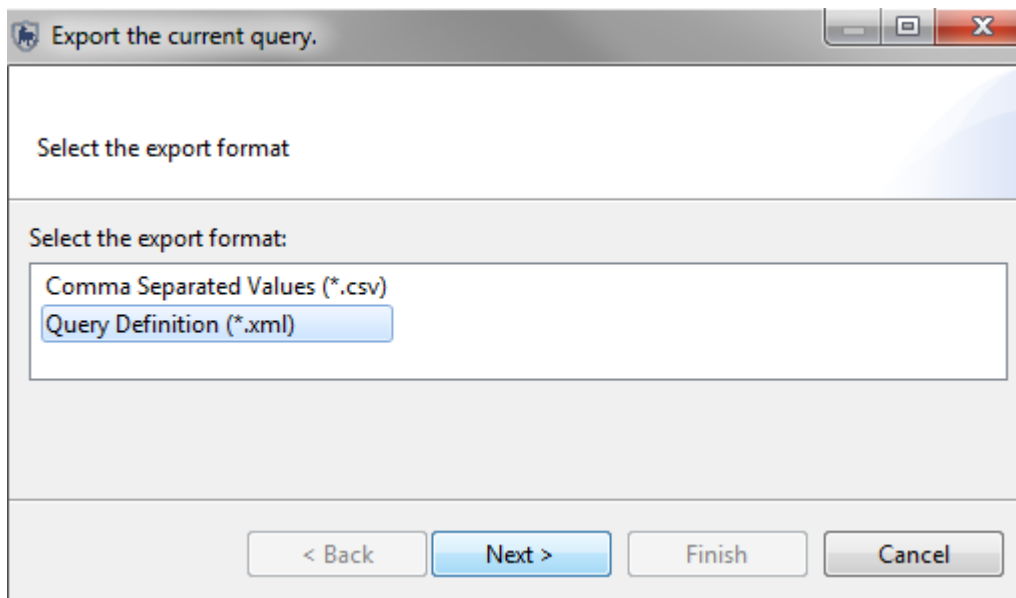
Comma Separated Values

A query export of the file type Comma Separated Values will produce a text file that can be imported into other spreadsheet or database software, to recreate the results that are seen in the Tabular Results view.

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.

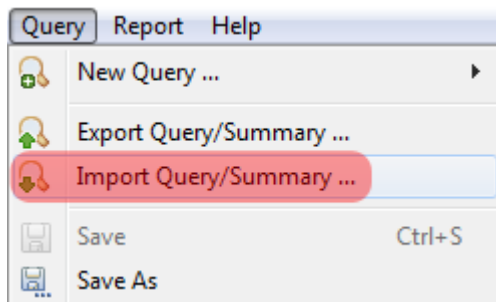
Using the menu or the export query icon  you can export queries and summaries.



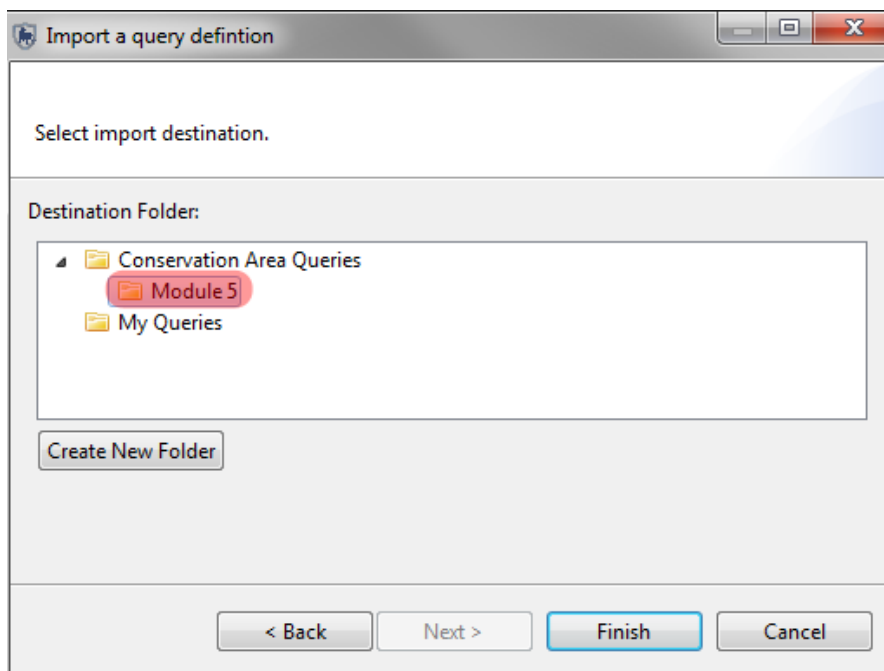
Importing Queries and Summaries

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.

Note: Importing into a custom folder isn't required but the exercise will highlight some options for query management.

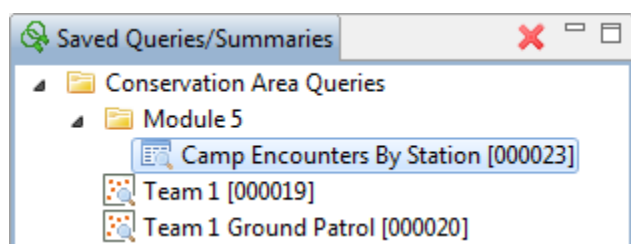


- From the menu select **Import Query/Summary ...**
- Browse to folder **Module 5 \ Queries**
- Select **Camp Encounters By Station.xml**
- Click **Open**
- Click **Next**



- Select the folder **Conservation Area Queries**
- Double-click **Create New Folder** to rename folder to **Module 5**
- Click **Finish**

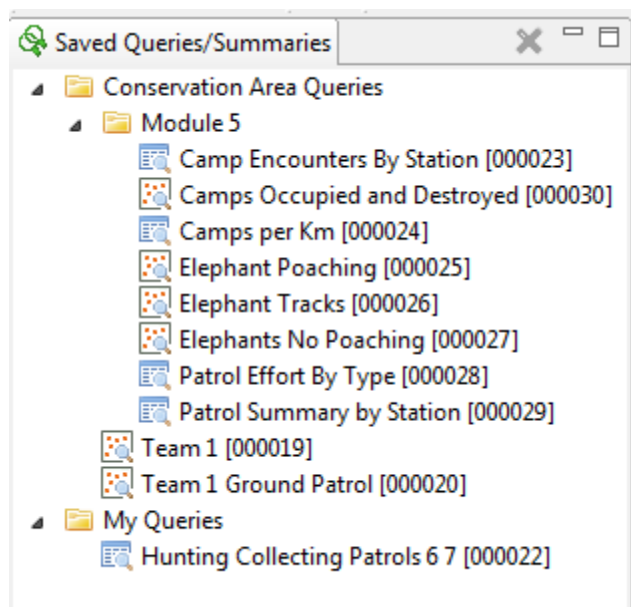
Under the Module 5 folder the newly imported summary should appear.



- Double-click on the summary to make it active and view the summary structure
- Run query

In the Queries directory there are other queries and summaries that will need to be brought into SMART.

- Import the remaining queries and summaries into the same folder of **Module 5**



- Activate the query “Camps Occupied and Destroyed” by **double-clicking** the name
- Change the dates to be **All Dates**
- Click **query properties**
- Click **De-Select All**
- **Turn on** the attributes of:
 - **Patrol ID**
 - **Patrol Start Date**
 - **Patrol End Date**
 - **Station**
 - **Team**
 - **Observation Category 2**
 - **Camp Capacity**
 - **Stakes to Dry Meat**
- Click **OK**

- Run query to verify changes to column selection
- **Save** the query

Note: This was done to prepare the query for Module 6, where this query will be referenced in a report.

<End of Module 5 - Queries and Summaries>

Module 6 – Reports

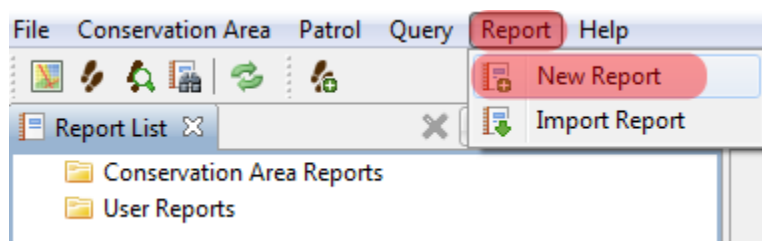
Objective:

This Training 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.

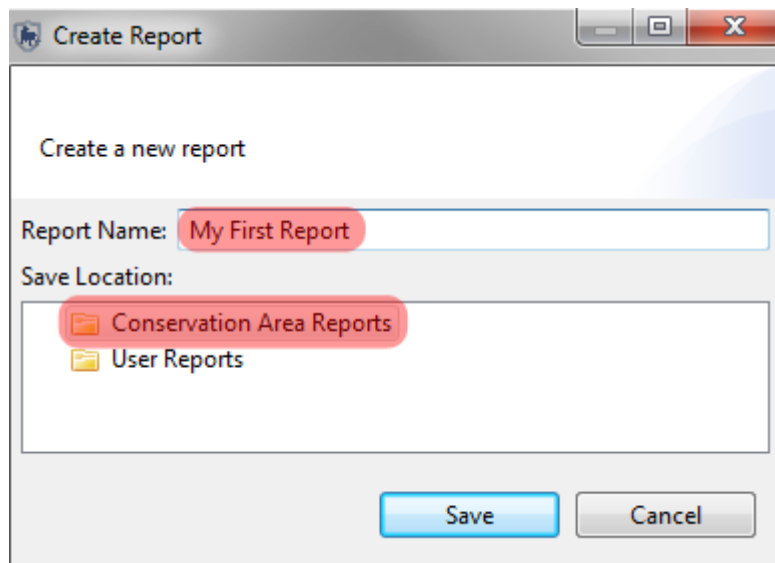
- ***Understanding the Components of the Report Editor***
- ***Configuring Data Access***
- ***Creating Headers and Footers***
- ***Creating Master Pages***
- ***Updating the Library***
- ***Building a Report***
- ***Running a Report***
- ***Exporting Reports***

Detailed Steps:

The Conservation Area does not come pre-loaded with any reports, so the very first step is to create a report.



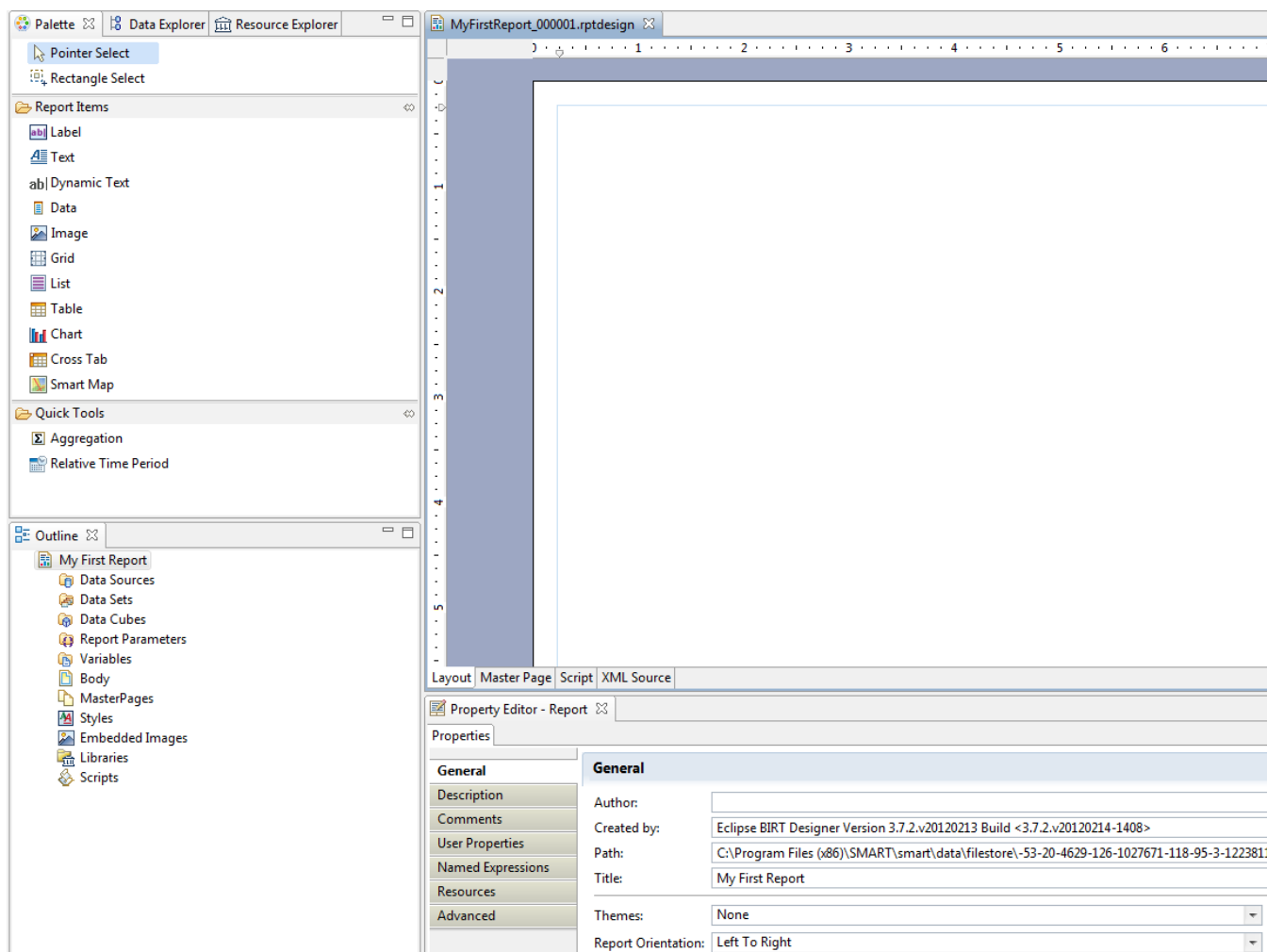
- From the menu select **New Report**



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

Components of the Report Editor

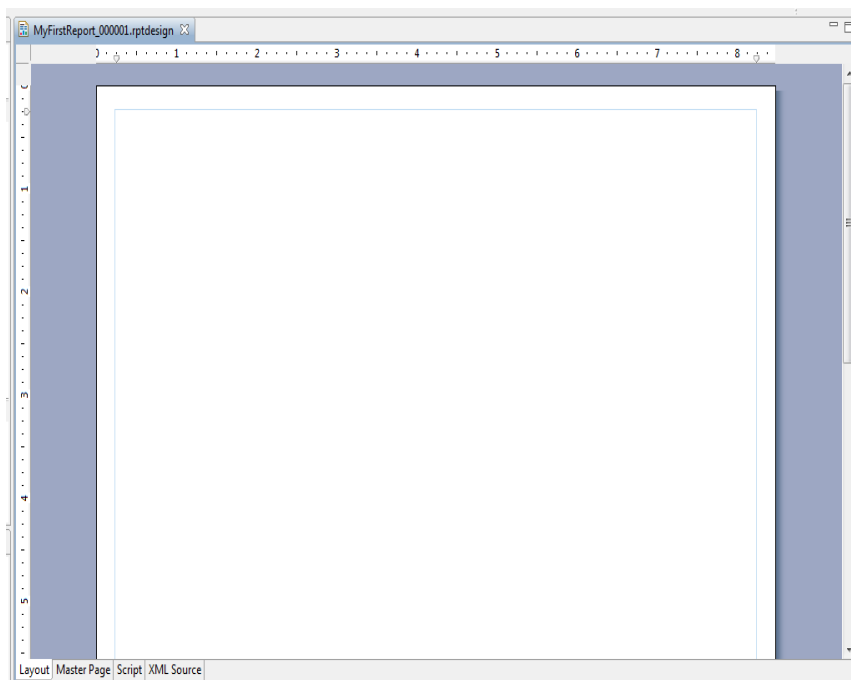
The Report Editor consists of a few basic components which contain their own functionality and have their own purpose.



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.

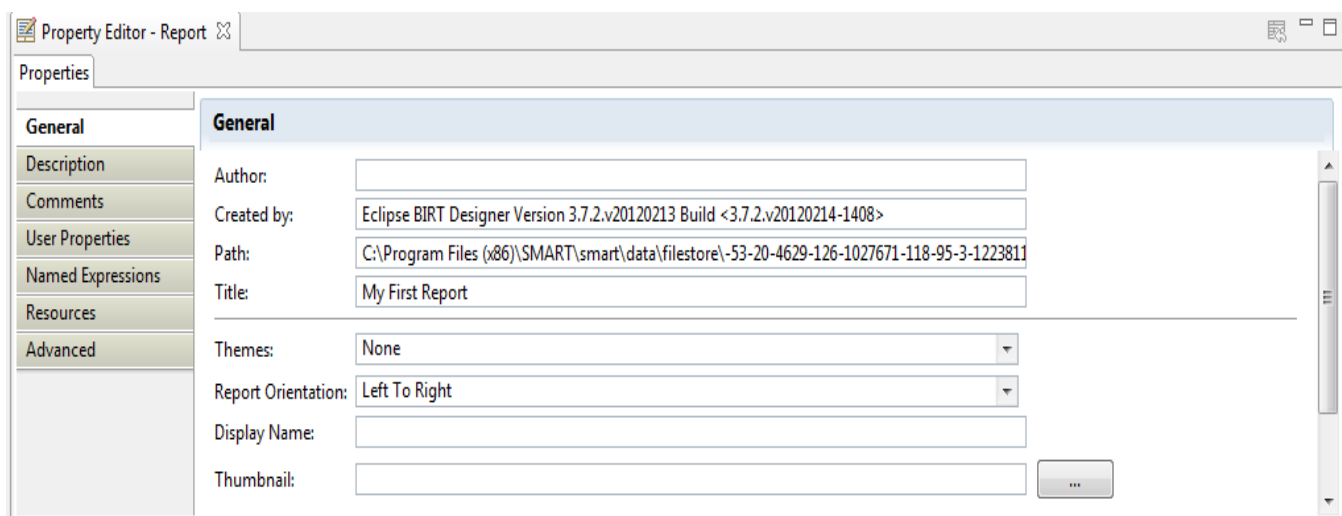


Property Editor

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 (Layout tab)

Used to specify general properties of the report.



Report Properties (Master Page tab)

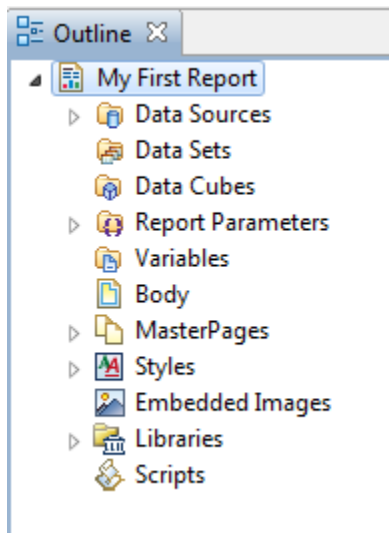
Used to specify general properties of the report's master page.

The screenshot shows the 'Property Editor - Master Page' window. On the left is a 'Properties' sidebar with tabs: General, Border, Margin, Header/Footer, Comments, and Advanced. The 'General' tab is selected. The main area is titled 'General' and contains the following fields:

- Name: NewSimpleMasterPage
- Header height: 0.5 in
- Footer height: 0.5 in
- Width: 8.5 in
- Height: 11 in
- Background color: (color picker) Auto
- Orientation: Auto
- Type: US Letter

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 Sources - Linked to the embedded databased of the active Conservation Area (SMART Data). Other data sources can be included, allowing for external data to be part of the report.

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

Data Cubes - Used to aggregate tables and query results

Report Parameters - Used to create new report parameters

Variables - Used to create custom variables using a JavaScript editor. Custom variables allow for commonly used information to be reused without having to recreate it upon each use

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.

MasterPages - A Simple Master Page is included by default in this folder. The default has elements for Headers and Footers which are common elements that are standardized before reports are generated.

Styles - Styles or themes include fonts, colors, date and number formatting, alignment and other common style options that are common to many applications.

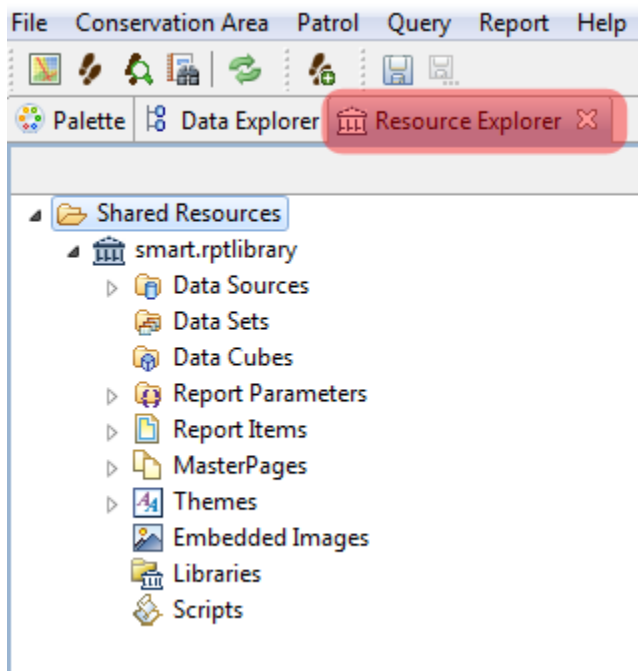
Embedded Images - Any images to be included in the report must first be included in this folder.

Libraries - A library is where common objects are stored. Common objects in a library can be used by anyone accessing the Report Editor. By default there is one library (smart) included in this folder but other libraries can be created and populated with common elements. Libraries in this folder are linked to the Resource Explorer (see below). The structure of the library under the Resource Explorer is similar to the structure used in the outline. Objects created in your working area (Outline) can be exported to the Library.

Scripts - Any custom scripts written will be made available in this folder.

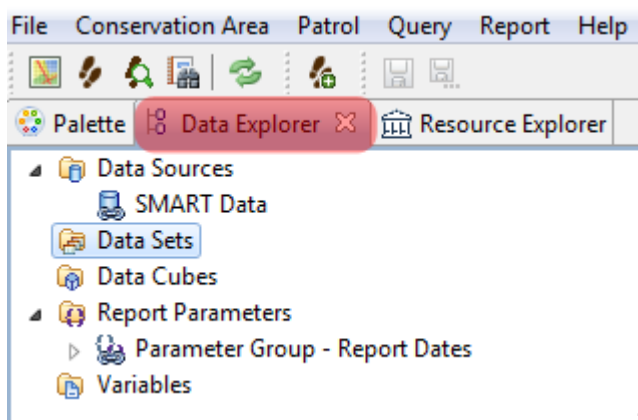
Resource Explorer

The Resource Explorer is where the Shared Resources of the library are accessed.



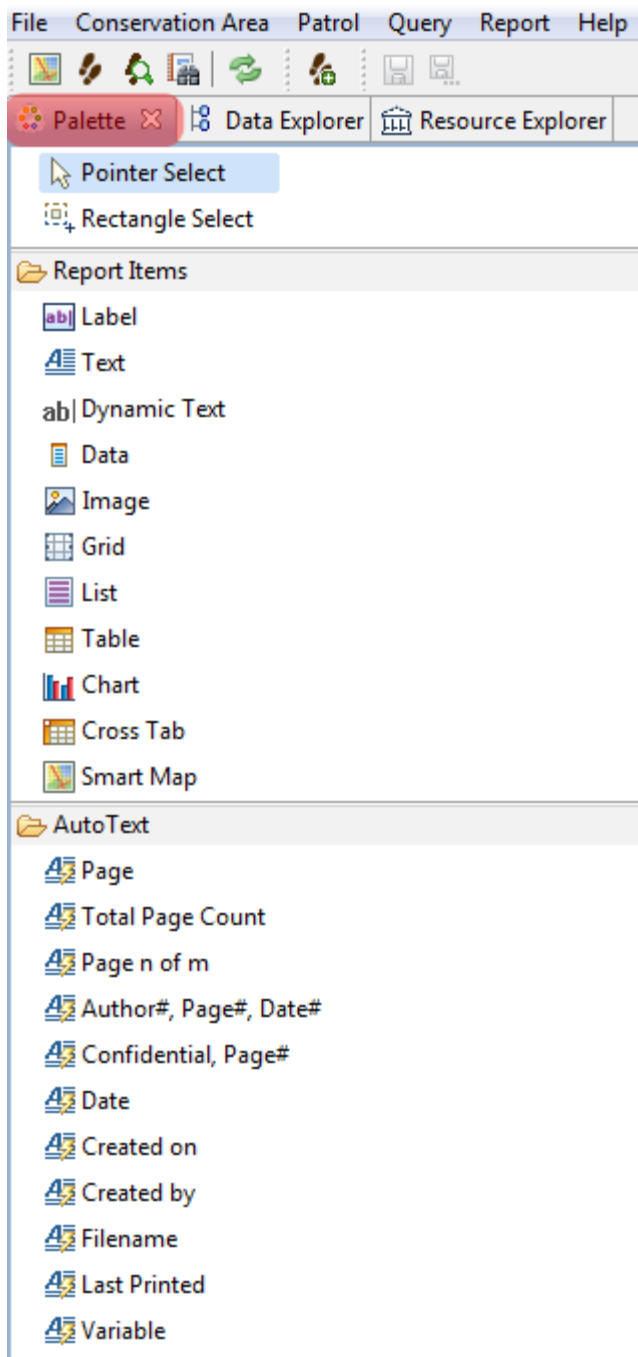
Data Explorer

The Data Explorer allows for access to common data sources held within the library.



Palette

The Palette is where the base objects are selected and included in the report.



Report Items

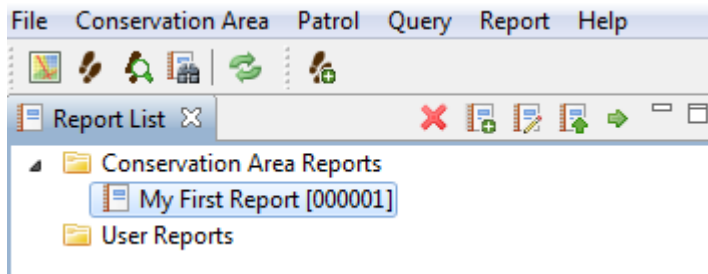
- **Label** - generally single line objects used for report titles or object labels.
- **Text** - open text boxes allowing for static text to be typed into the report.
- **Dynamic Text** - text based off custom or predefined variables or functions
- **Data** - items in this data section have to be pre-loaded 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






AutoText

AutoText options allow for dynamic data with predefined characteristics to be inserted into the report.

Report List Toolbar

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

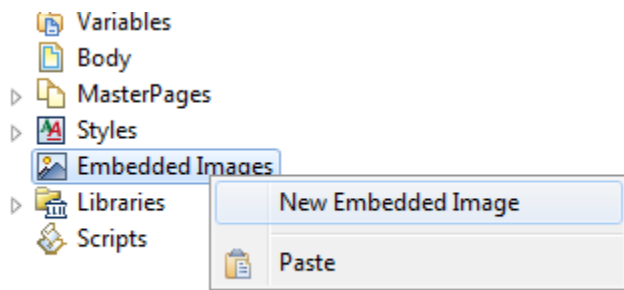


	Deletes the selected report(s)
	Creates a new report
	Edits the selected report(s)
	Runs and exports the selected report(s)
	Runs the selected report(s)

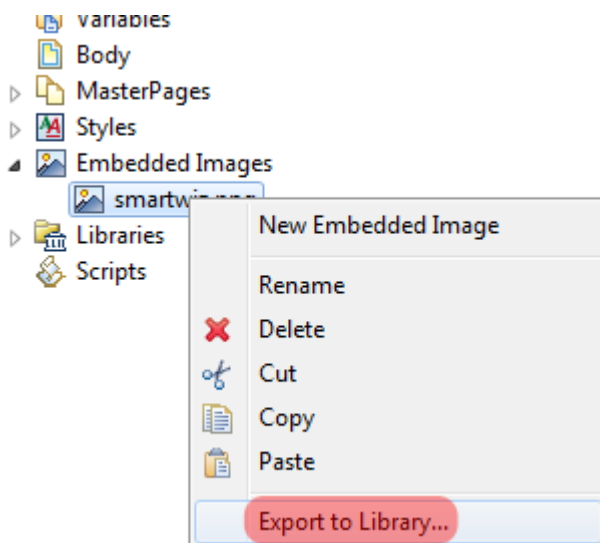
Configuring Data Access

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.***

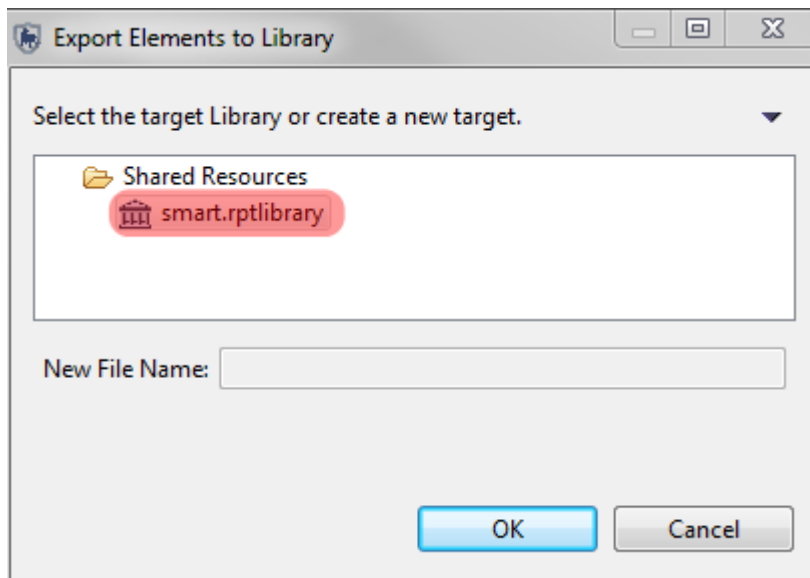
Embedded Images



- Using the mouse right-click over the **Embedded Images** in the Outline
- Select **New Embedded Image**
- Browse to the folder **Module 6 \ Embedded Images**
- Select **smartwiz.png**
- Click **Open**



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



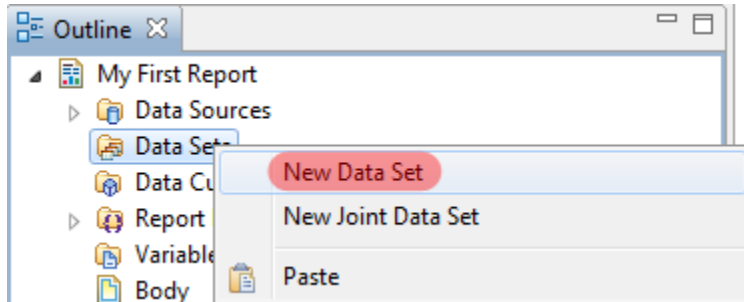
- Select **Shared Resources ... rptlibrary ... smart.rptlibrary**
- Click **OK**

The embedded image is now available in your Outline and the Shared Resources Library.

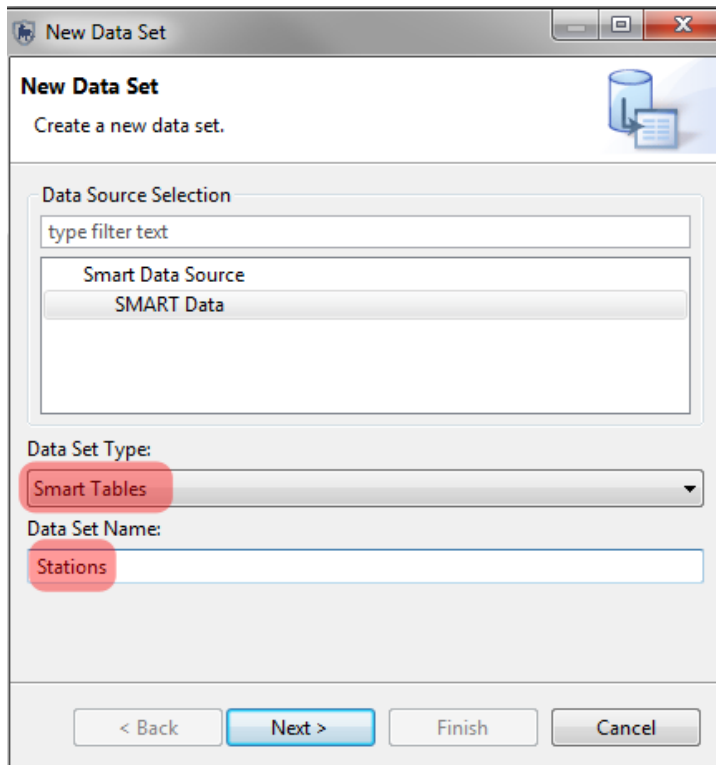
Configuring Tables, Queries and Summaries

Tables

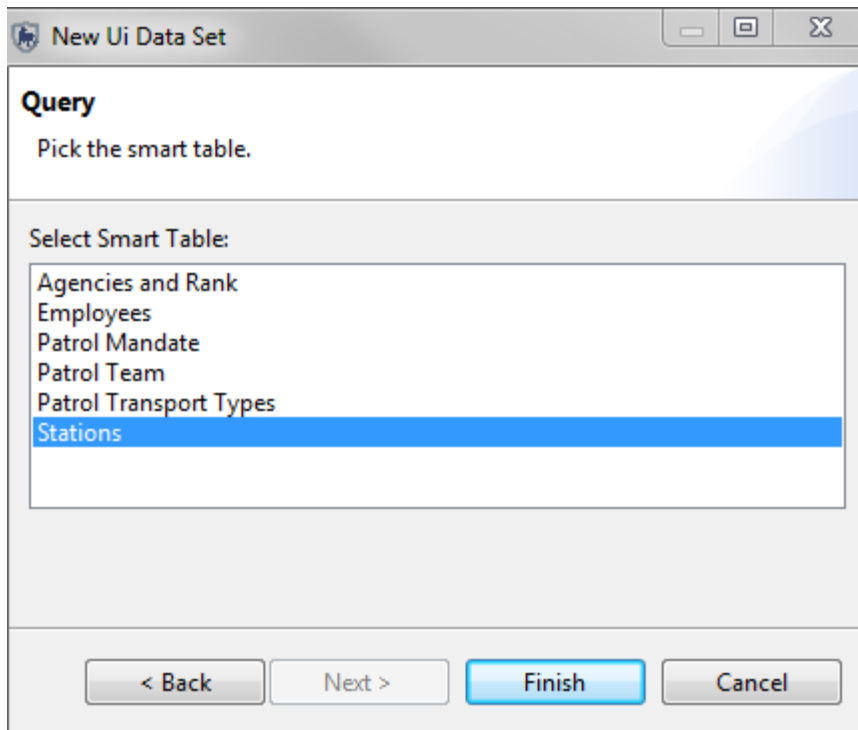
The first data set you will configure will link the SMART table of Employees to the Report Editor.



- In the Outline right-click over **Data Sets** and select **New Data Set**



- From the Data Set Type pulldown select **Smart Tables**
- For Data Set Name type in **Stations**
- Click **Next**



- Select the SMART Table of **Stations**
- Click **Finish**
- Click **OK**

Queries

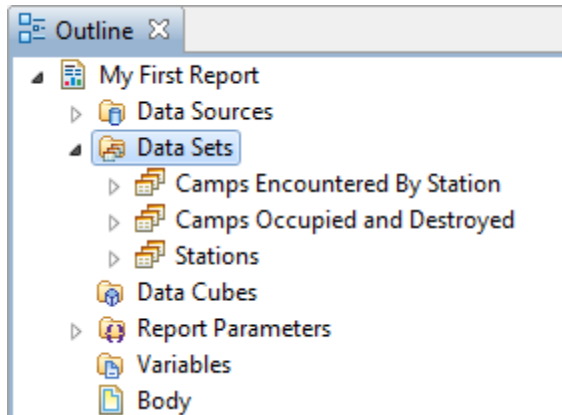
The process of configuring a query is similar to the previous example except that the Data Set Type selection will point towards a query and not a static table. You will also have to navigate to the query to select the correct one.

- In the Outline right-click over **Data Sets** and select **New Data Set**
- From the Data Set Type pulldown select **Smart Queries Data Set**
- For Data Set Name type in **Camps Occupied and Destroyed**
- Click **Next**
- Navigate to the custom folder of **Module 5** and select **Camps Occupied and Destroyed**
- Click **Finish**
- Click **OK**

Summaries

The process of configuring summaries follows the same process as the Queries.

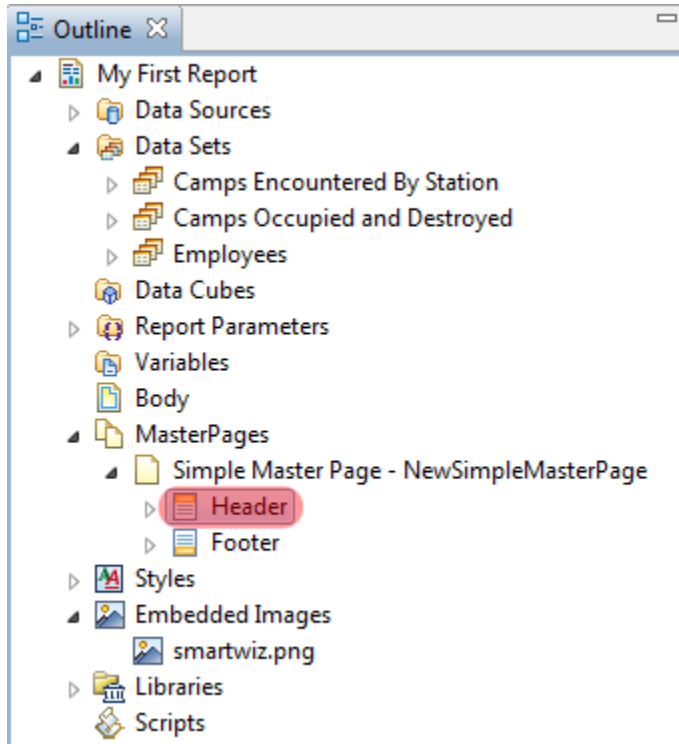
- In the Outline right-click over **Data Sets** and select **New Data Set**
- From the Data Set Type pulldown select **Smart Queries Data Set**
- For Data Set Name type in **Camps Encountered By Station**
- Click **Next**
- Navigate to the custom folder of **Module 5** and select **Camps Encountered By Station**
- Click **Finish**
- Click **OK**



Note: The library should be used for objects common to all or almost all reports. Libraries containing many queries and summaries will have a negative impact on the performance of the Report Editor. It is recommended to keep the queries and summaries in the Outline, unless they will be used extensively throughout many reports.

Creating Headers and Footers

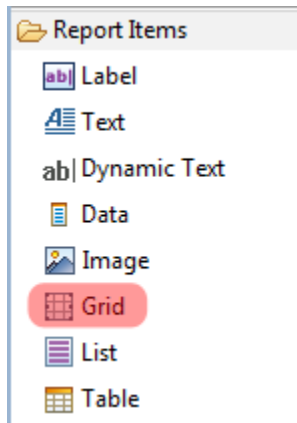
Headers and footers provide standardized context to reports, and they will be the first report object that you will create.



- In the Outline under MasterPages select **Header**

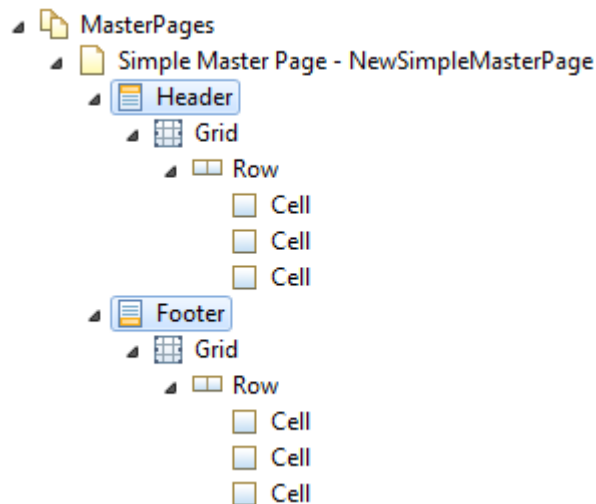
The Report Editor will enable the headers found in the Design Window. To provide placement options you will add a grid that will allow for three objects to be placed beside each other.

Placing a Grid



- Select the **Master Page** tab in the **Design Window Area**
- From the Report Items select and drag **Grid** into the **Header** of the **Design Window**
- Select **Number of Columns: 3**
- Select **Number of Rows: 1**
- Click **OK**
- Click below the inserted grid but above the bottom of the Header
- Use the mouse to select the bottom of the grid and **expand the grid's height**
- Repeat the process and **add the same sized grid to the Footer**

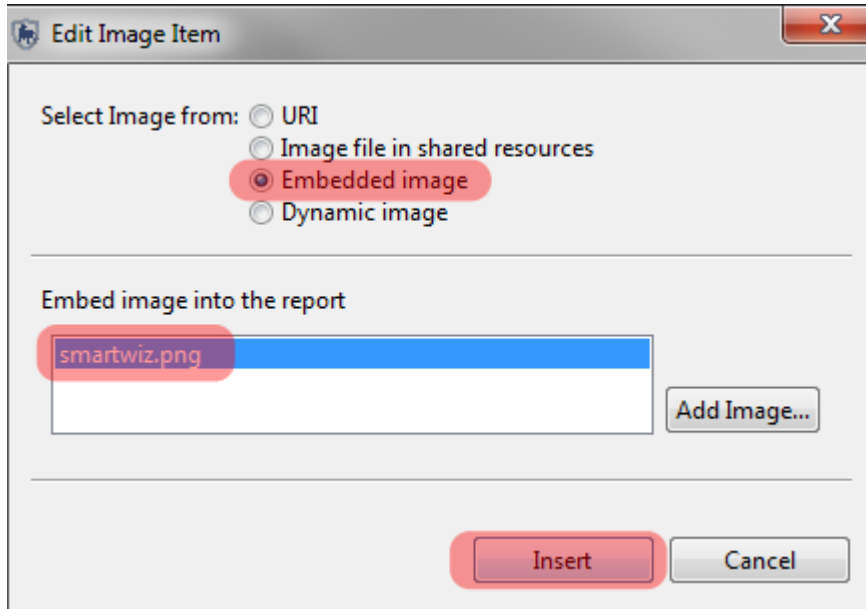
In the Outline under the MasterPages you can now see the structure of the grid. The grids have been created and now you will add elements into the grid cells.



Adding an Image

This example will demonstrate adding the embedded image into the Header

- From the Report Items select **Image** and drag it into the **Header's left grid cell**

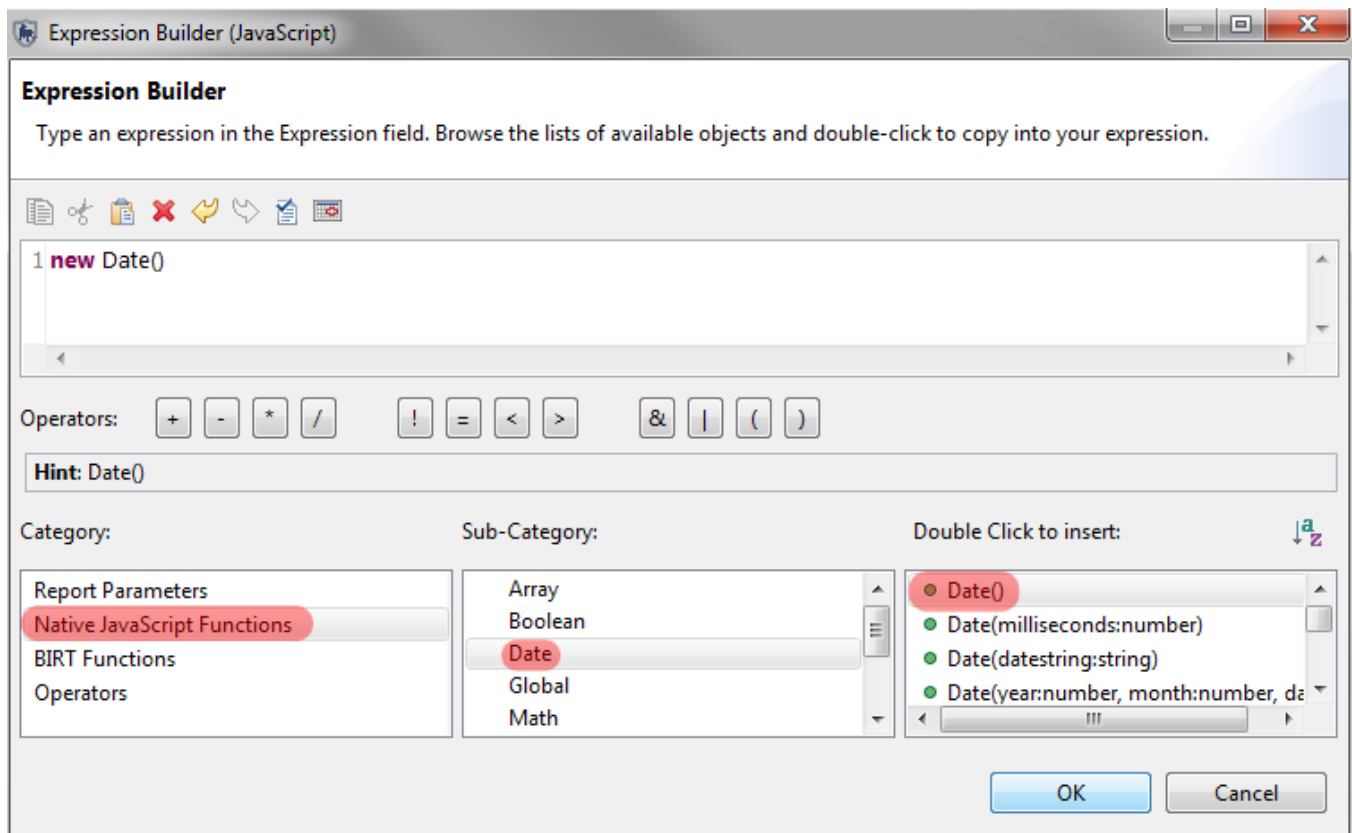


- Select **Embedded image smartwiz.png**
- Click **Insert**
- After the image has been placed, **resize image** to fit in the Header grid cell
- Click outside of the Header to deselect the image

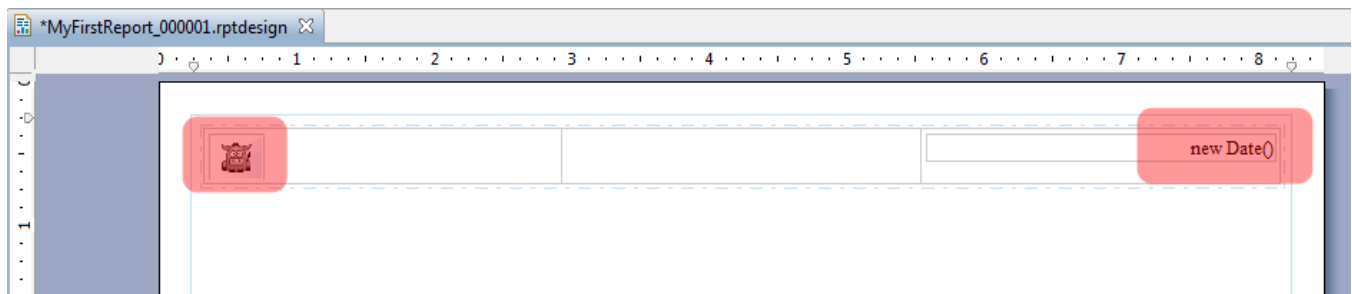
Adding Dynamic Text of Date

This example will demonstrate adding the dynamic text of today's date to the header.

- From the Report Items select **Dynamic Text** and drag it into the **Header's right grid cell**



- Select Category of **Native JavaScript Functions**
- Select Sub-Category of **Date**
- Double Click **Date()** to insert function into the expression builder.
- Click **OK**
- In the **Property Editor** (bottom of screen) select alignment of **Right**



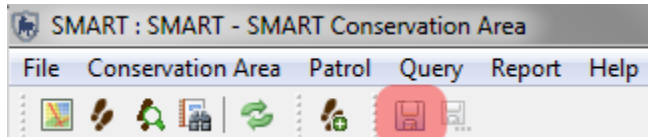
Adding Page Numbers to the Footer

- In the Footer's right grid cell add the **AutoText** object of **Page**
- In the **Property Editor** (bottom of screen) select alignment of **Right**
- In the Footer's left grid cell add the Report Item object of **Text**



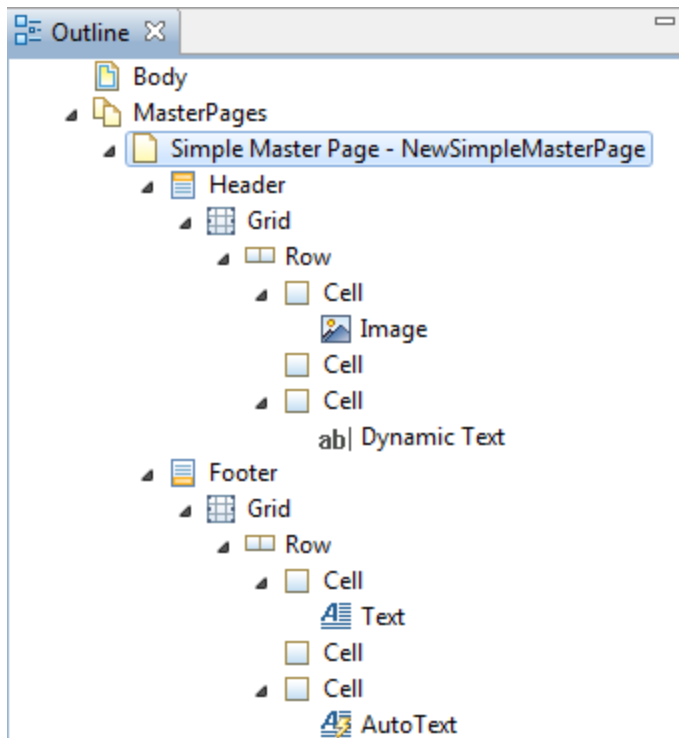
- In the text window type in **Created By: Pretoria TOT**
- Click **OK**

Now that you have introduced some objects into the report it is recommended that you save the report.

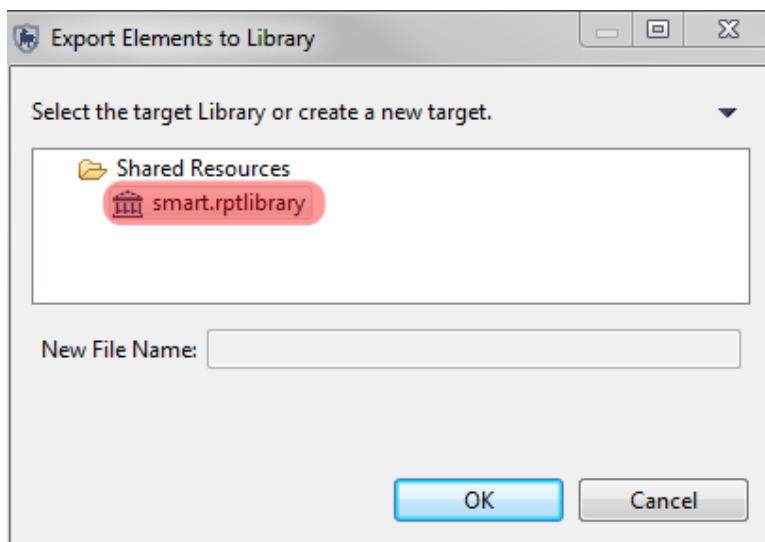


- In the icon bar click **Save Report**

In the Outline you can now see the grid structure and the four (4) items that were entered into the grid cells. These objects can be moved, copied/pasted, deleted, renamed or exported to the library by using the mouse right-click options. Moving objects around in the Outline provides another option to editing report objects other than using the Design Window.



- In the Outline MasterPages select **Simple Master Page - NewSimpleMasterPage**
- On the mouse right-click and select **Rename**
- Type in the new name of **My First MasterPage**
- Click **OK**
- Over top of the new name, right-click on the mouse and select **Export to Library**

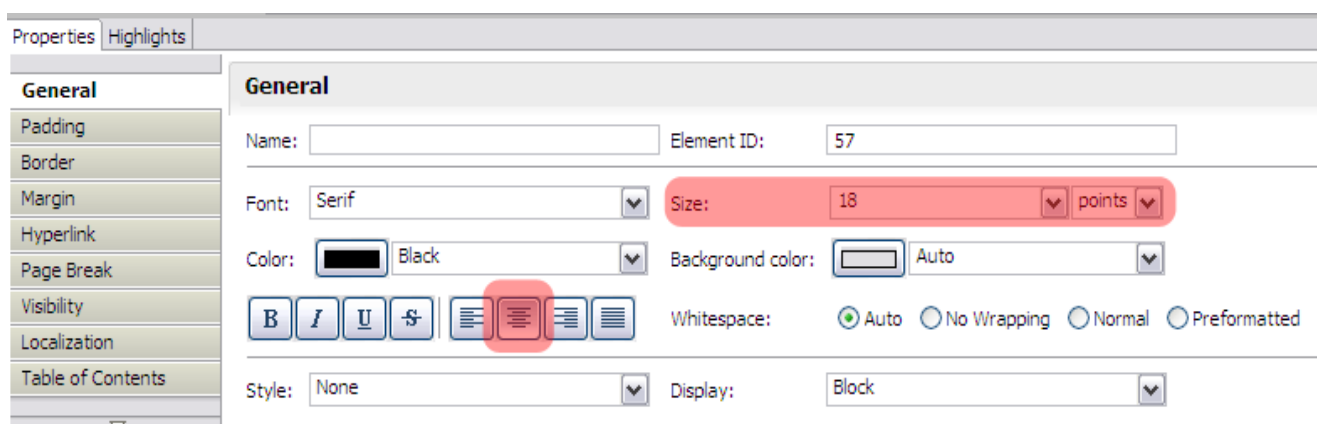


- Select **Shared Resources ... rptlibrary ... smart.rptlibrary**
- Click **OK**
- In the Resource Explorer tab, verify that the new MasterPage has been added
- **Save Report**

Adding Report Objects to the Layout

After adding the objects to the Header and Footer, the next element you will add will be the title of the report.

- Switch from the Master Page tab to the **Layout Tab** in the **Design Window**
- Drag the Report Item **Label** into the Layout
- Double-click the blank Label, then type **Camp Encounters for SMART Conservation Area**

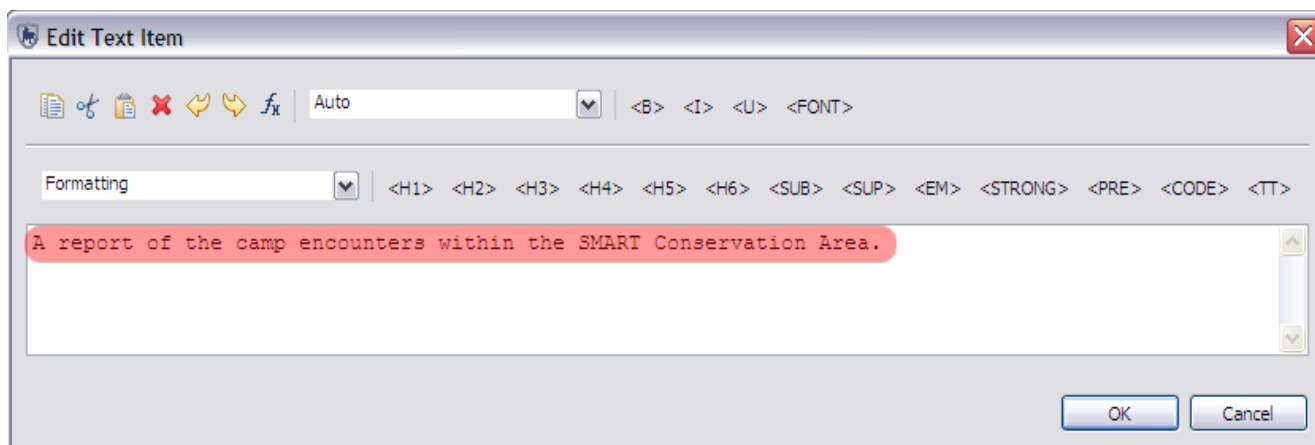


The screenshot shows the Properties Editor window with the 'General' tab selected. The 'Name' field is empty, and the 'Element ID' field contains '57'. The 'Font' is set to 'Serif', and the 'Size' is set to '18' points. The 'Color' is set to 'Black', and the 'Background color' is set to 'Auto'. The 'Whitespace' options are 'Auto', 'No Wrapping', 'Normal', and 'Preformatted'. The 'Style' is set to 'None', and the 'Display' is set to 'Block'. The 'Alignment' property is set to 'Center'.

- In the Properties Editor change the **font size to 18**
- Set the Alignment to **Center**

Adding Static Text to the Report Layout

The next item to add will be a simple explanation of the report using a static text box.



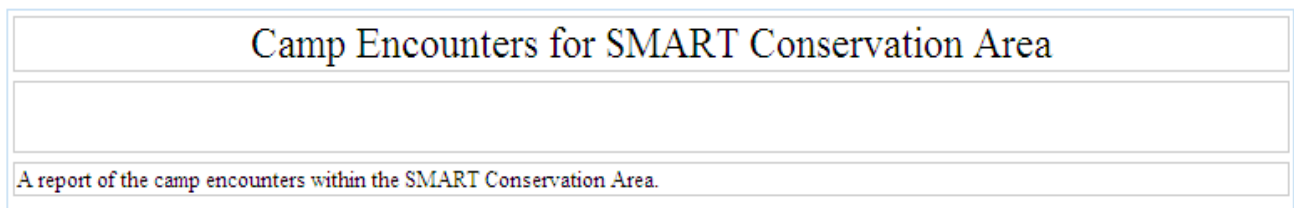
The screenshot shows the 'Edit Text Item' dialog box. The 'Auto' button is selected in the 'Formatting' section. The text area contains the text 'A report of the camp encounters within the SMART Conservation Area.' The 'OK' and 'Cancel' buttons are at the bottom right.

- Drag the Report Item **Text** into the Layout below the Label object
- In the Text Editor type in **A report of the camp encounters within the SMART Conservation Area.**
- Click **OK**

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.

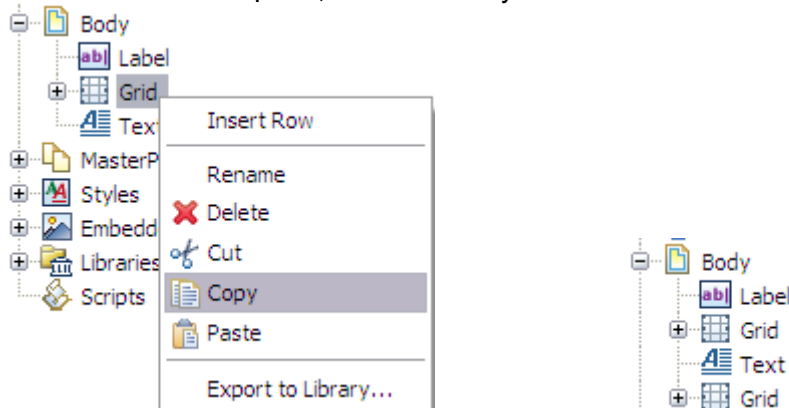
- Add a grid with the dimensions of **1 column and 1 row** to the layout
- Click in the middle of the empty layout to deselect the grid
- Drag the Static Text below the Grid
- **Select and resize** the grid to be approximately **40 pixels**
- Once again Click in the middle of the empty layout to deselect the grid
- Save the report

After the addition and resizing of the grid, the layout should look like the example below:



Using the Body to Organize Objects

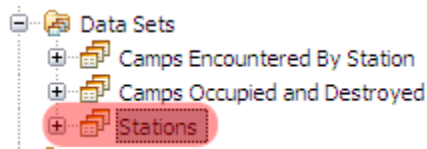
You will now make a copy of the grid that you used to create white space to provide more white space after the description; but this time you will use the Outline - Body to complete the task.



- Select the Grid and use the mouse right-click to make a copy
- While still in the Body, paste the copy and drag it below the text object

Adding Tables

Next in the process will be to add the table containing the stations of the Conservation Area.



- In the Outline - Data Sets select the table **Stations** and drag it into the Design Window

The Stations table contains a column that needs to be removed from the report. To remove a table field you must first have the table active in the Design Window.

	Station Name	Description	Active
	[Station Name]	[Description]	[Active]
	Footer Row		

A red rectangular popup icon with the word 'Table' is shown at the bottom left of the table.

- Moving the mouse to the lower left of the table will bring up a popup icon. When the Table icon appears click the popup. This will select the table or do nothing is the table is already selected.

	Station Name	Description	Active
	[Station Name]	[Description]	[Active]
	Footer Row		

The 'Active' column header is highlighted in blue. A right-click context menu is open over the 'Active' column, showing options: 'Undo Delete Columns', 'Redo', 'Cut', 'Copy', 'Paste', and 'Delete' (which is highlighted).

- Select the column **Active** by clicking the blank cell above the work Active with the left mouse button. When selected it will highlight and turn blue.
- Use the right mouse button and select the option **Delete**

A report of the camp encounters within the SMART Conservation Area.

	Station Name	Description
	[Station Name]	[Description]
	Footer Row	

- After the column Active has been deleted, resize the table by selecting the lower right and dragging it towards the center of the screen to make the table approximately half the width of the screen.

Adding Queries and Summaries

The process for adding a query or summary is the same as the previous example of adding the table of stations.

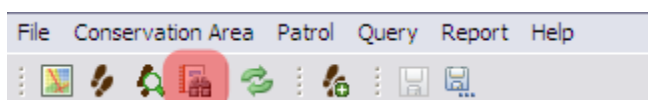
Header	Hunting Camp	Gathering Camp	Logging Camp	Fishing Camp
[Header]	[Count Camp]	[Count Camp]	[Count Camp]	[Count Camp]
Footer Row				

- In the Outline - Data Sets select the summary **Camps Encountered By Station** and drag it into the Design Window
- **Count Camp** - text without square brackets [] indicates text that can be edited
- **[Count Camp]** - text with square brackets [] indicates that values will be brought into the tables when the report is actually run.
- Change the four (4) entries of Camp in the top row to match the previous screenshot.
 - **Hunting Camp**
 - **Gathering Camp**
 - **Logging Camp**
 - **Fishing Camp**

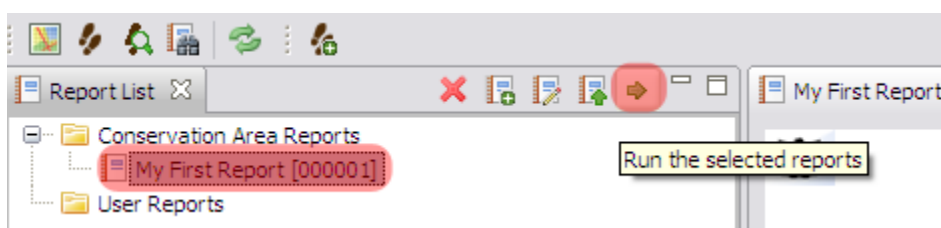
	Header	Hunting Camp	Gathering Camp	Logging Camp	Fishing Camp
	[Header]	[Count Camp]	[Count Camp]	[Count Camp]	[Count Camp]
	Footer Row				

- Highlight the table and select the row containing the updated names by selecting the very left cell in the row.
- In the Properties Editor, give the headers a **Bold** font
- Save report

Now that the report has some information in it, we will run the report to see how it looks.



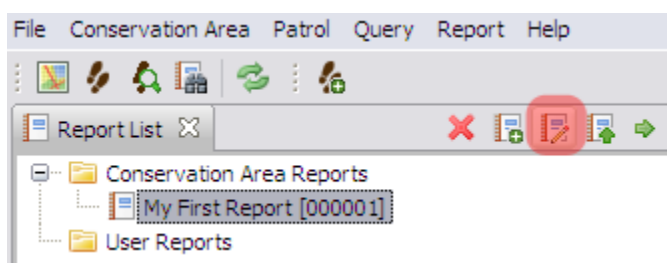
- Click the Report Icon to return to the main screen



- Select the report **My First Report** and click the **run report icon**

- Select the Date Range of **All Dates**
- Click **Continue**

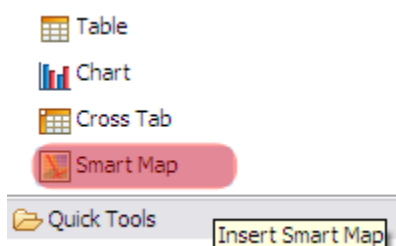
After processing, the report will appear in window on the right.



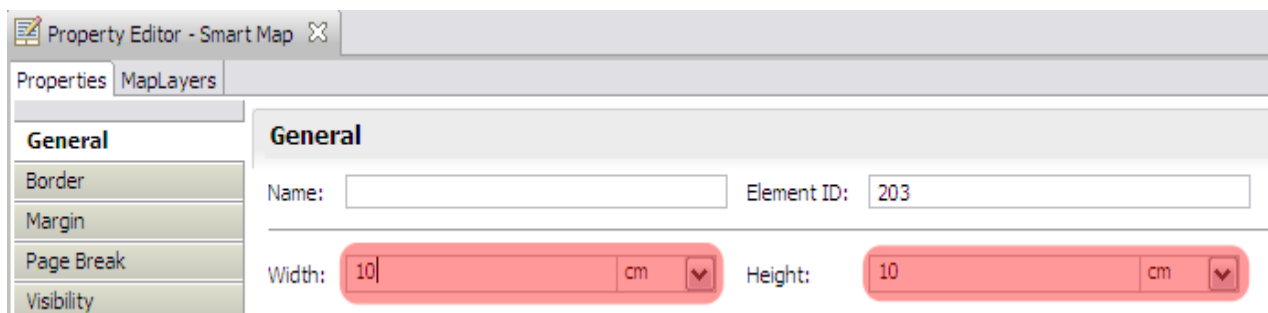
- To return to the Report Editor click the **Edit Report icon**

Adding Maps to the Report

In Module 5: 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.

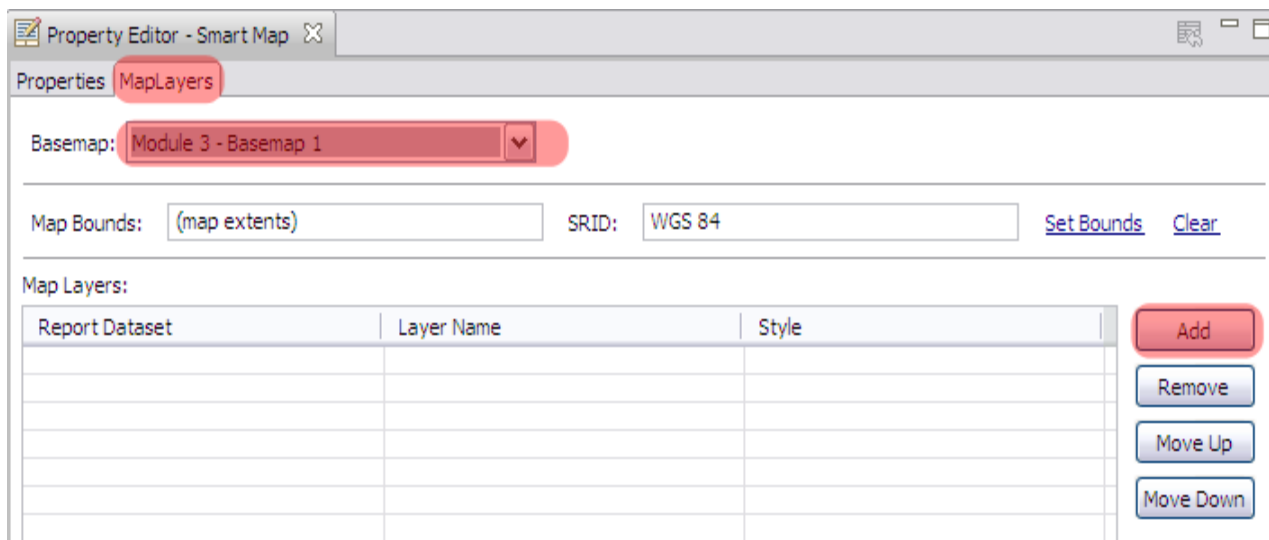


- You could also **Right Click** My First Report in the Report List and select **Edit Report** to get to this editing screen.
- **drag the Smart Map icon** from the Report Items List into the Designer Window



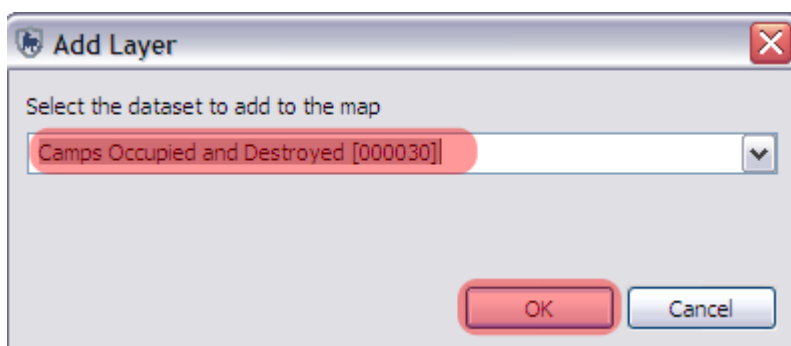
- In the Properties Editor change the dimensions of the map to:
 - **Width = 10 cm**
 - **Length = 10 cm**

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



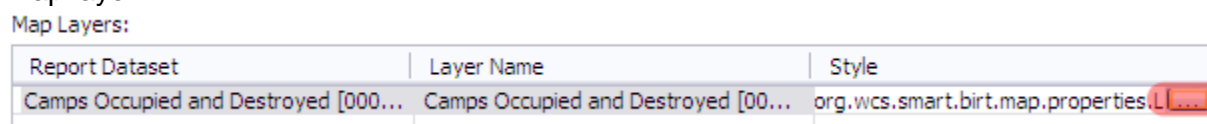
- In the Property Editor window switch tabs from Properties to **MapLayers**
- Select **Module 3 - Basemap 1** from the pulldown list
- Click **Add**

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.



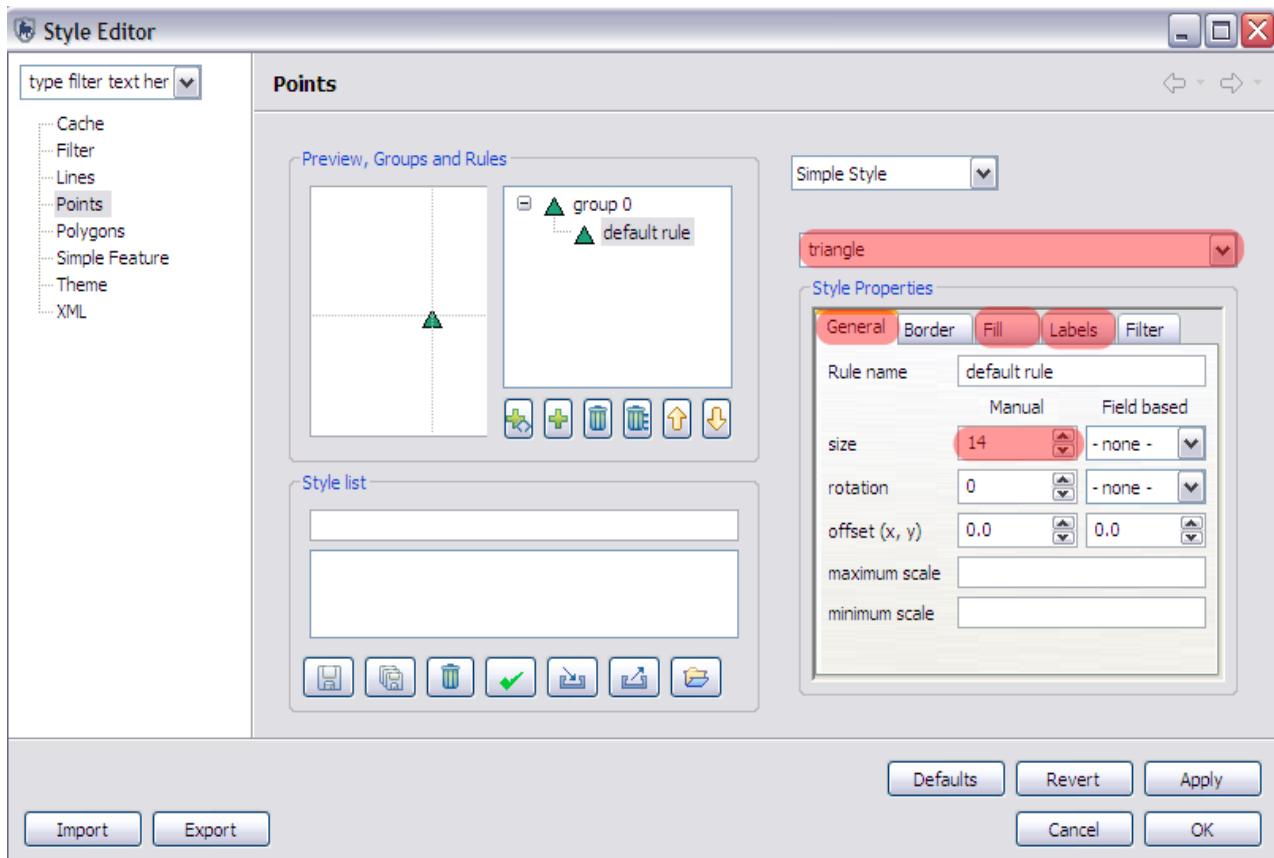
- Select **Camps Occupied and Destroyed**
- Click **OK**

The map object reference is Camps Occupied and Destroyed. You will now add a style to the map layer.



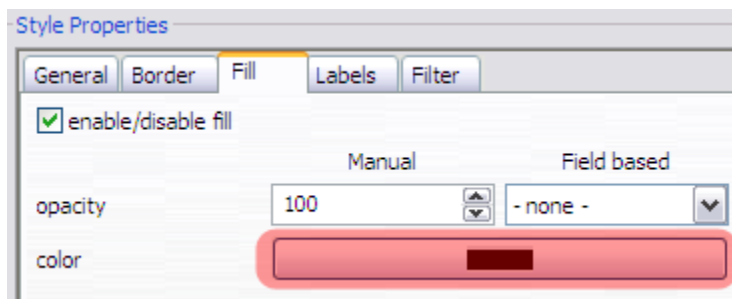
- In the Style cell click the **icon** on the right to bring up the Style Editor

In the General Tab set:



- **Symbol Type = triangle**
- **size = 14**

In the Fill Tab:



- **Set the color of the symbol to Black**

In the Labels Tab set:

Style Properties

General Border Fill **Labels** Filter

☒ enable/disable labelling

	Manual	Field based
label		Camp_Capacity
opacity	100	- none -
rotation	0	- none -
font	set font	
font color	[black]	
halo	[black]	0
anchor	top	right
displacement	0.0	0.0

Vendor Options

max displacement pixels []

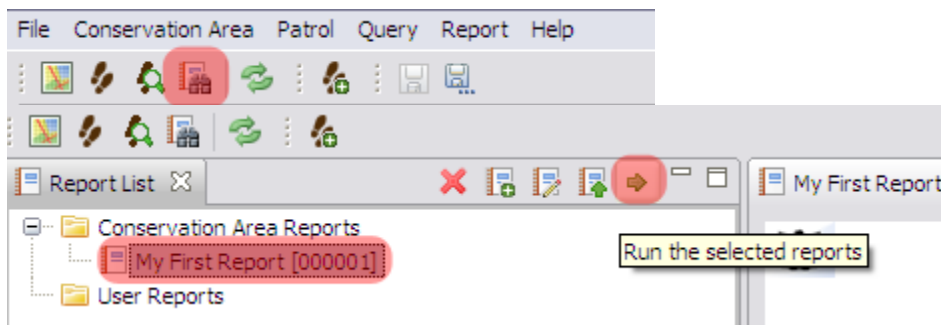
auto wrap pixels []

space around pixels []

Defaults Revert Apply Cancel OK

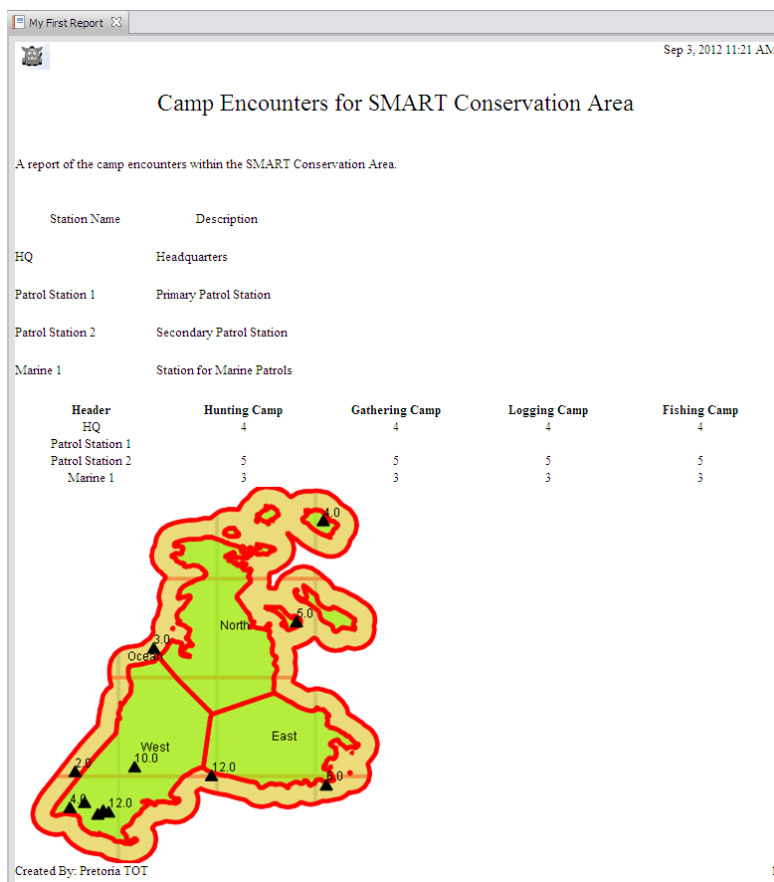
- **label = Camp Capacity**
- Click **Apply**
- Click **OK**
- Save report

To view the map object in the report you must re-run the report.



- Rerun the report with **All Dates** and view the results

After the processing has completed, the results should look similar to the following screenshot:



Changing View Extents for the Map

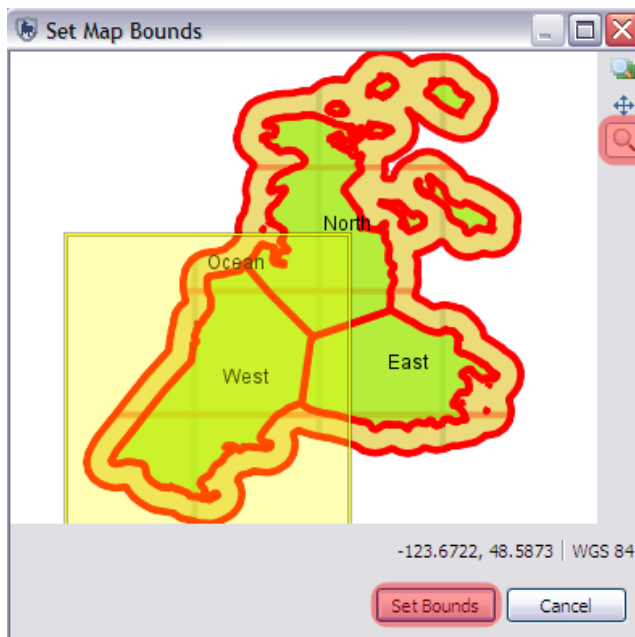
The default view extents for a newly added map object is the entire area of the basemap. At times you might find it useful to change the view extents to highlight a specific portion of the Conservation Area.

After previewing the report return to the Report Editor.

The screenshot shows the 'Property Editor - Smart Map' window with the 'MapLayers' tab selected. The 'Basemap' dropdown is set to 'Module 3 - Basemap 1'. The 'Map Bounds' field contains '(map extents)'. The 'SRID' field is set to 'WGS 84'. There are 'Set Bounds' and 'Clear' buttons. Below, the 'Map Layers' table is visible.

Report Dataset	Layer Name	Style
Camps Occupied and Destroyed [000...	Camps Occupied and Destroyed [00...	<?xml version="1.0" encoding="UTF...

- Select the **MapLayers** tab for the map object
- Click **Set Bounds**



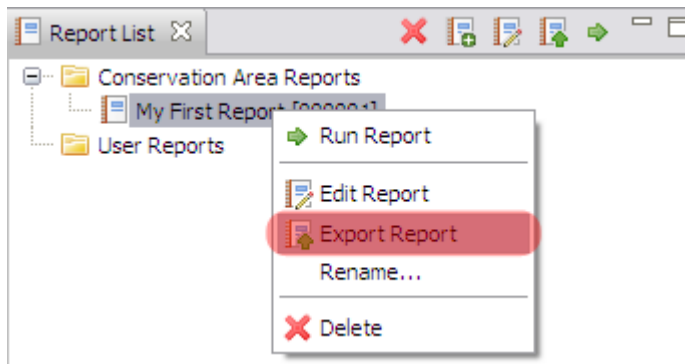
- Using the Zoom Icon **draw a box around the Administrative Area - West**
- Click **Set Bounds**
- Save Report
- Rerun and preview report

Exporting Reports

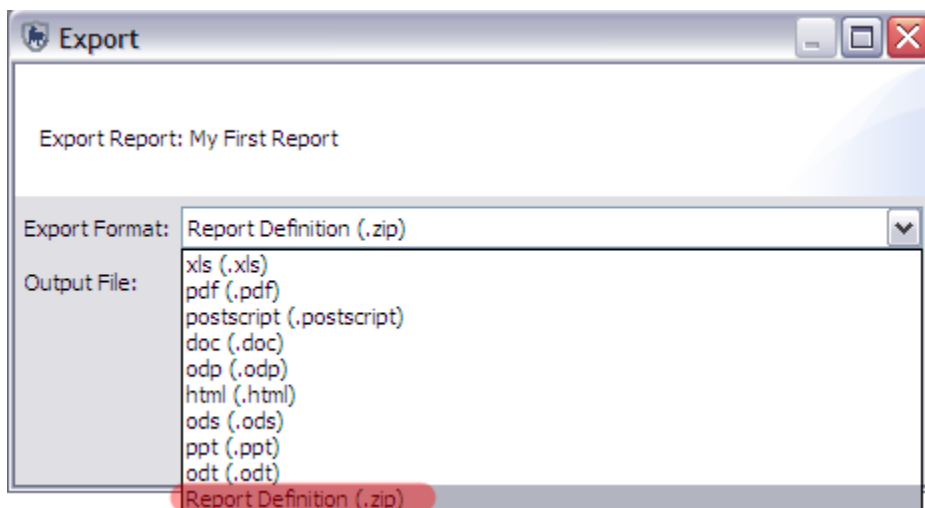
Reports can be exported in a variety of formats, which then can be used for easy distribution or importing into other applications. In addition to being able to export/import patrols, queries and summaries, SMART can export report definitions that can be imported into another installation of SMART. This feature allows for a template to be built and then distributed to other regions or offices to reduce the effort in creating new reports, and of course to ensure consistency in reporting.

Report Definition

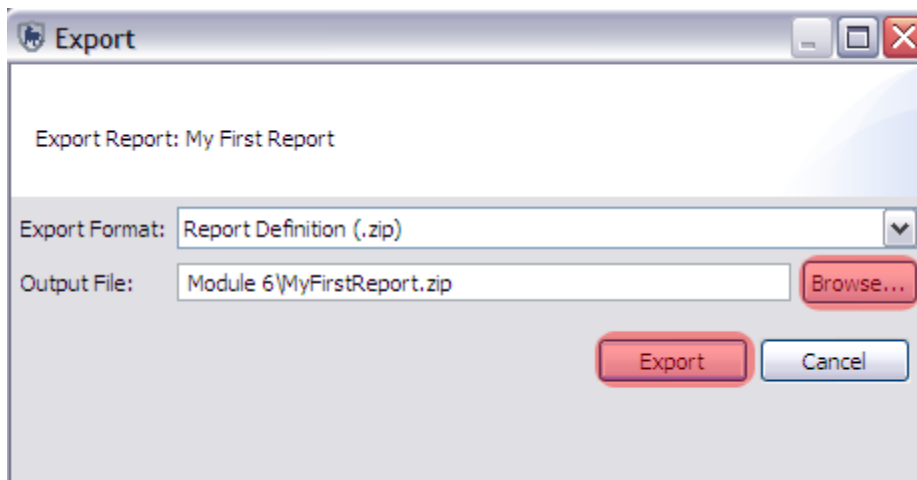
A Report Definition zipfile is a complete package that allows for other installations of SMART to import the report and its dependencies. A report can contain images, queries and other report objects and the report definition file bundles these together to make for easy importing into another system.



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



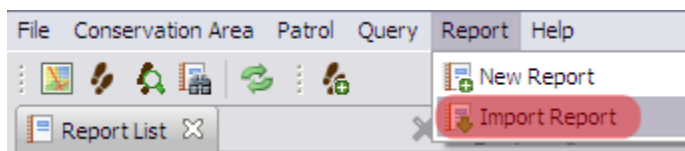
- At the bottom of the list select **Report Definition (.zip)**



- Browse to the folder **Module 6**
- Keep the name as **MyFirstReport.zip**
- Click **Export**
- Click **OK**

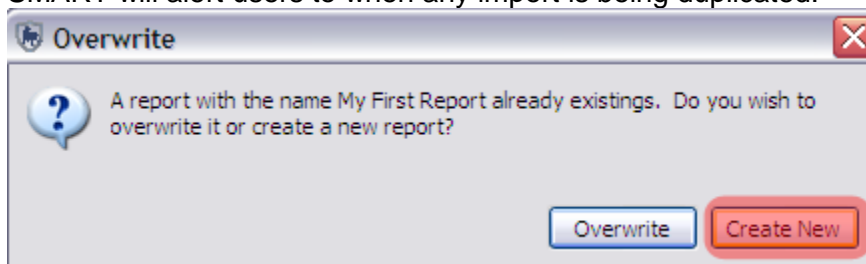
Importing Reports

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.

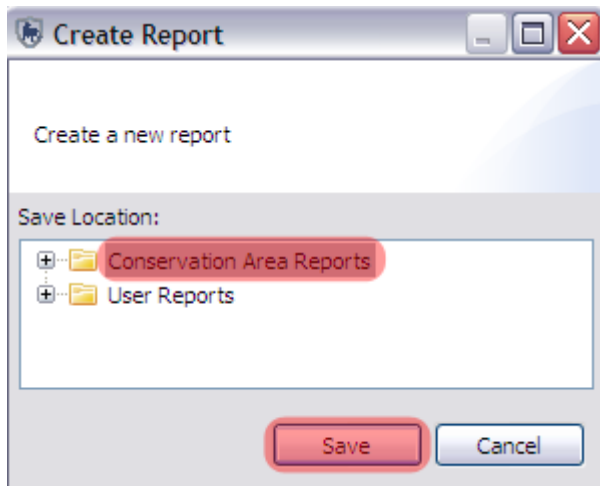


- In the menu select **Import Report**
- Browse to the folder **Module 6**
- Select **MyFirstReport.zip**
- Click **Open**

SMART will alert users to when any import is being duplicated.

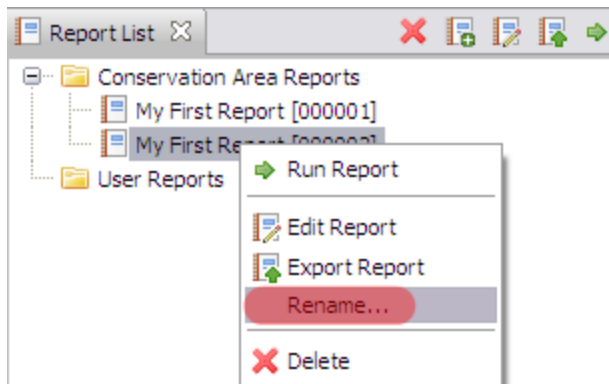


- Click **Create New**
- Click **OK**



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

In the Report List you should see two reports. Currently both reports have the same name, but they do have unique identifiers.



- To rename the imported report use the mouse and right-click to select **Rename**
- Rename to **My Imported Report**

Note: After the rename the unique identifier for this report will stay the same.

<End of Module 6 - Reports>

Module 7 – Gridded Analysis

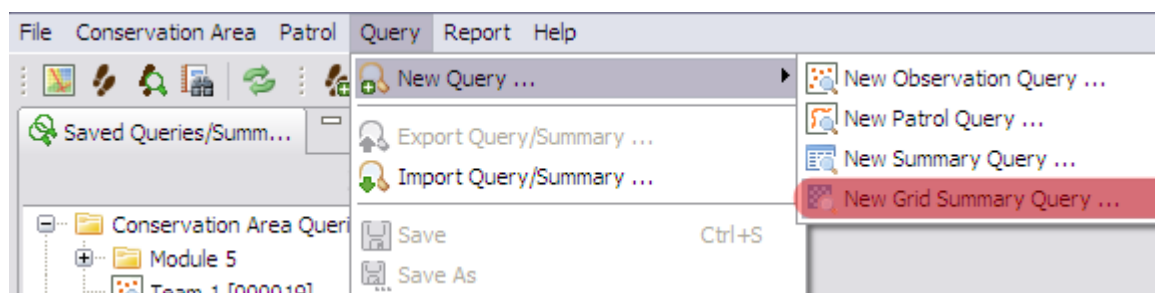
Objective:

This Training Module will guide you through the process of creating, running and viewing the results of a Gridded Analysis Summary Query. Building a gridded analysis summary query follows the same procedures as building other types of queries that were covered in Module 5: Queries and Summaries. This training module will cover the specific requirements for building and running a gridded analysis summary query, and how to apply custom styling to the produced grid.

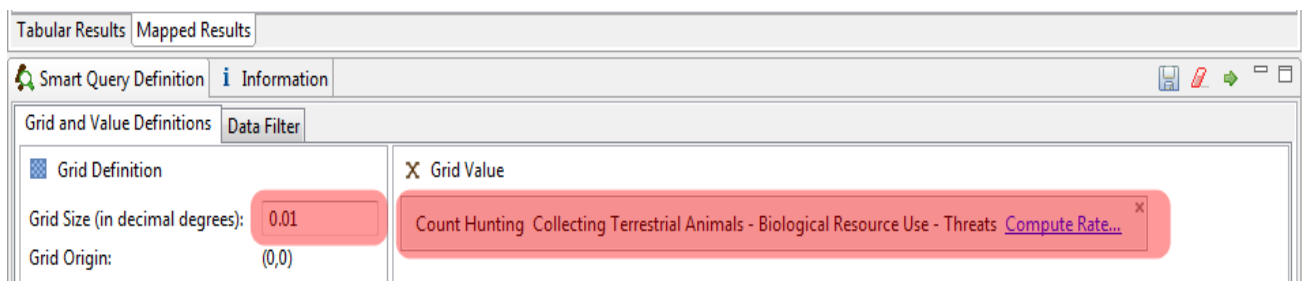
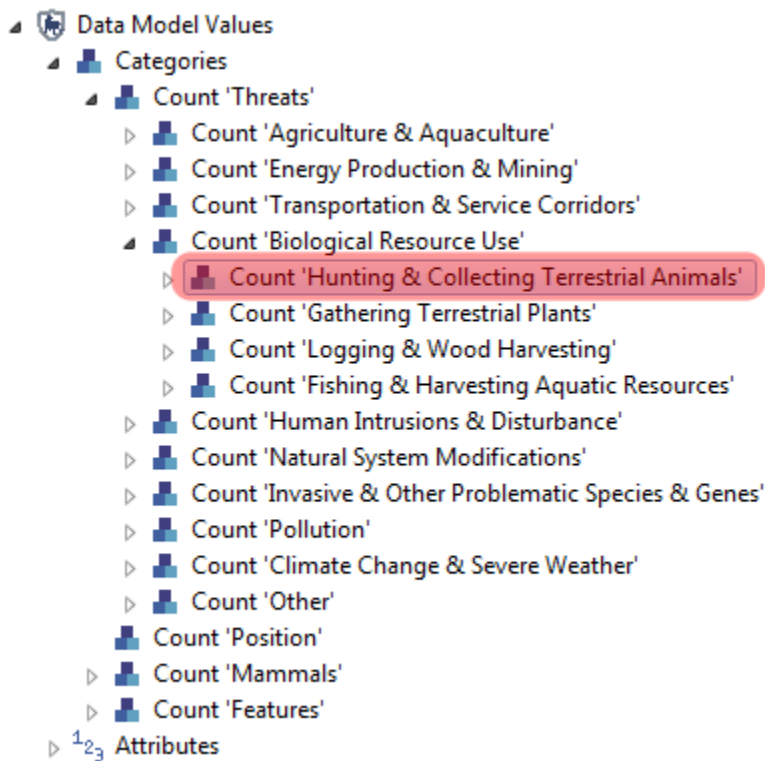
Detailed Steps:

Building a Query

Building a gridded analysis summary query follows the same procedures as building other types of queries, that were covered in Module 5: Queries and Summaries.



- In the menu select **New Grid Summary Query**
- Set the date to **All Dates**



- From the Data Model Values double-click **Count Hunting and Collecting Terrestrial Animals** or select the entry and click **Add to Query**
- Leave the default value for Grid Size (in decimal degrees) to **0.01**
- Run query

Tabular Results

The default view is for the list of tabular results. This table shows the tile coordinates and values of how many observations were found within that grid cell. The table also includes the denominator value if there is one selected. For most users, the Tabular Results will not be as important as the Mapped Results.



Query: <No Name Gridded Summary>

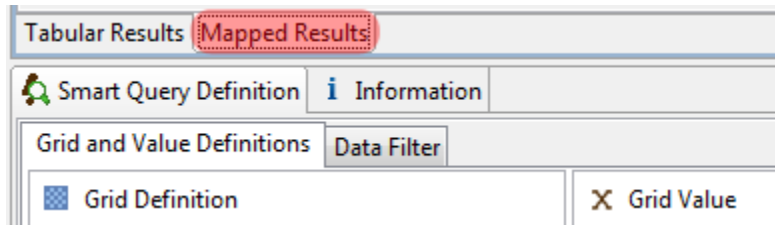
Date:

Number of Records: 42

Tile X ID	Tile Y ID	Value	Denominator
-12361	4839	2.0	0.0
-12361	4840	1.0	0.0
-12360	4839	2.0	0.0
-12360	4840	1.0	0.0
-12359	4838	1.0	0.0
-12359	4839	2.0	0.0
-12358	4836	1.0	0.0
-12358	4837	1.0	0.0
-12358	4839	2.0	0.0
-12357	4838	3.0	0.0
-12357	4839	2.0	0.0
-12357	4840	3.0	0.0
-12356	4835	2.0	0.0

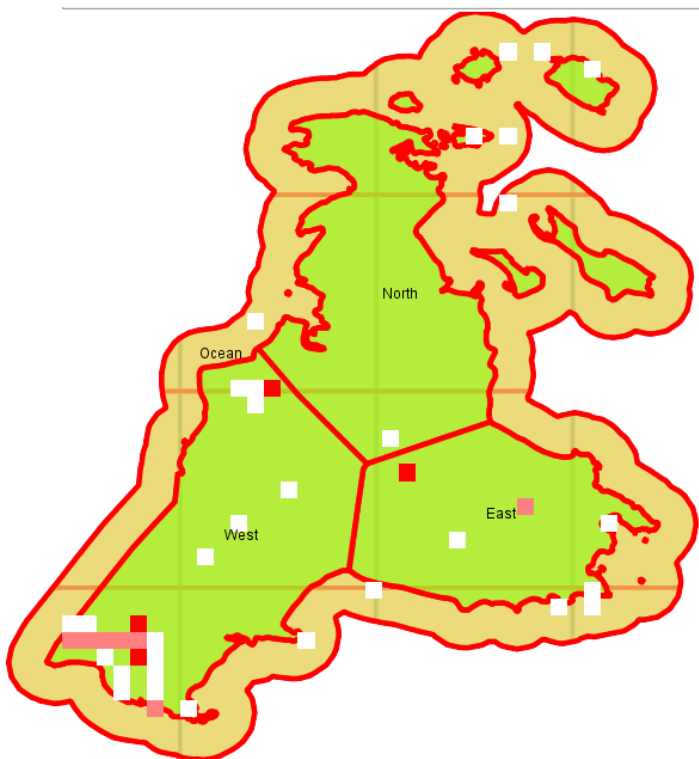
Mapped Results

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.



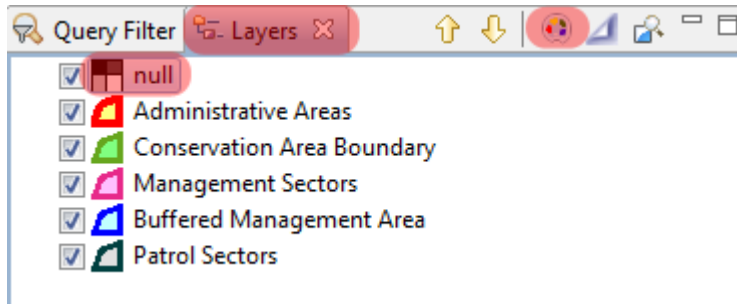
- Switch to the Mapped Results Tab
- If the Conservation Area isn't visible click the zoom to extents icon (see above)

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

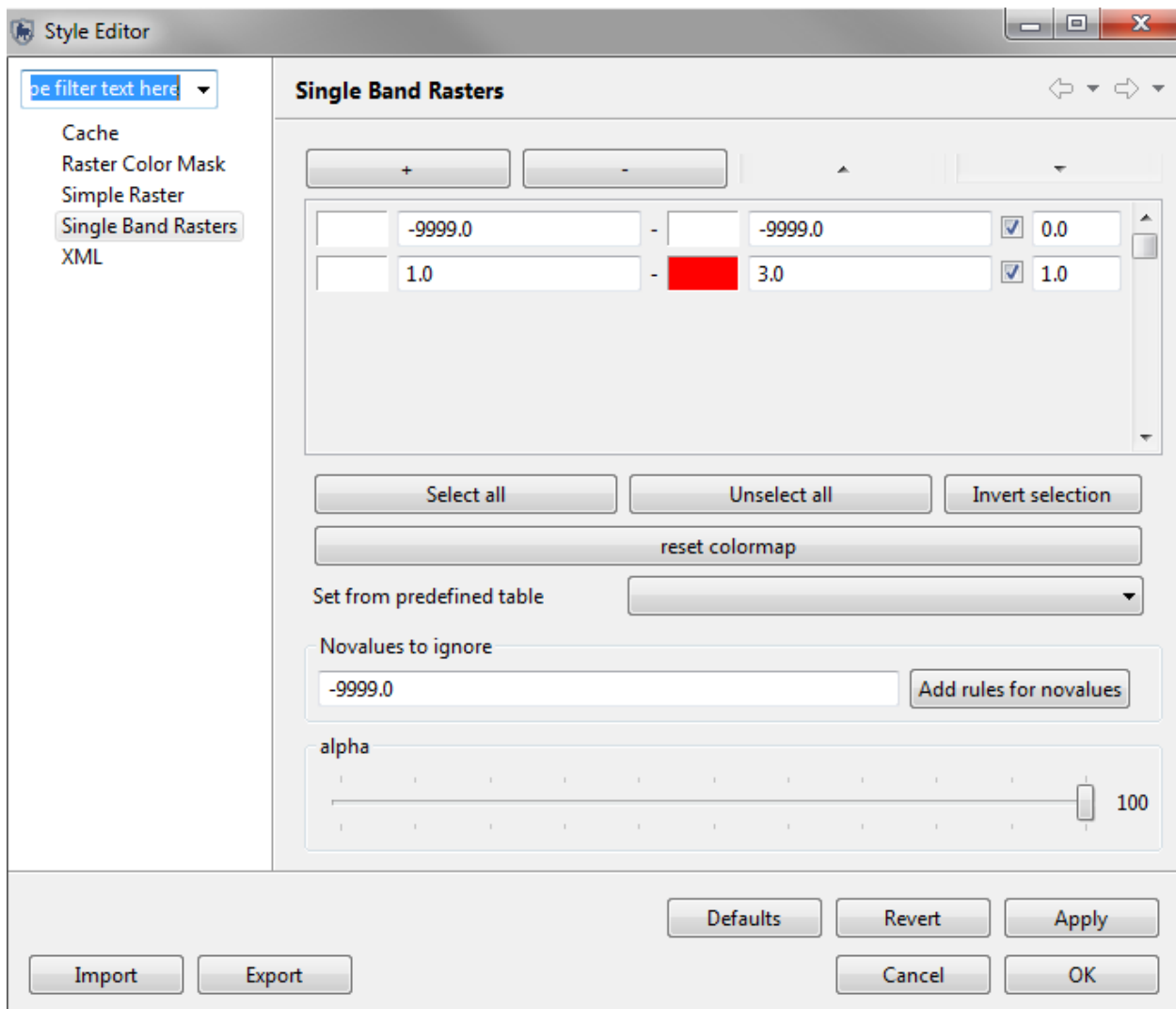


Changing Color Stylings of Rasters

In previous modules you explored some of the various options on styling points, lines and polygons and now you will change the styling of a raster or grid layer.



- Switch to the **Layers Tab** (next to Query Filter)
- Select the **Raster Layer (null)**
- Click the **Change Style icon**



Visible Grids

These values show the colors and values for the visible layer. The initial value is 1 and the maximum value for any single grid cell would be 3. The starting color is currently white and the maximum values are red. The value on the right hand column is the transparency setting. The grid cells with returned observations are set to 1.0.

The value of -9999 shows that there are no recorded observations for that grid cell. The transparency is set to 0.0.

- 1.0 is fully visible
- 0.0 is fully transparent

	-9999.0	-		-9999.0	<input checked="" type="checkbox"/>	0.0
	1.0	-		3.0	<input checked="" type="checkbox"/>	1.0

	-9999.0	-		-9999.0	<input checked="" type="checkbox"/>	0.0
	1.0	-		3.0	<input checked="" type="checkbox"/>	1.0

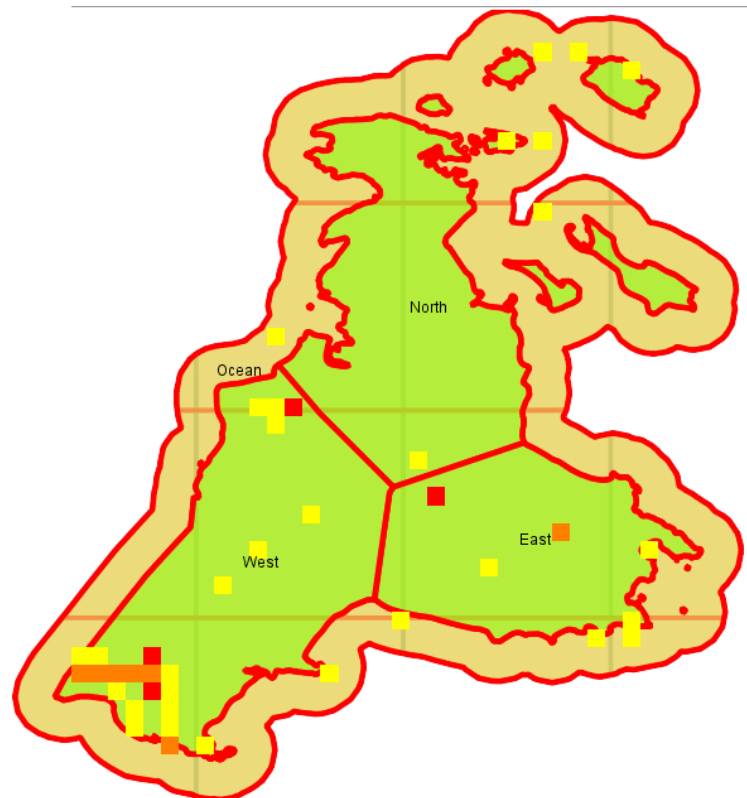
- Click the **white box** to the left of the initial value of 1.0

	-9999.0	-		-9999.0	<input checked="" type="checkbox"/>	0.0
	1.0	-		3.0	<input checked="" type="checkbox"/>	1.0

- In the color picker select **Yellow**
- Click **OK**
- In the lower right click **Apply**
- Click **OK**

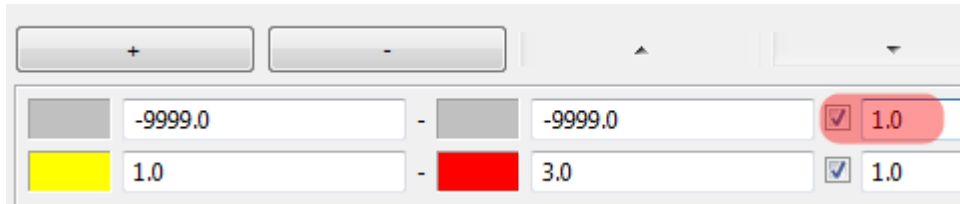
The new colors now start with yellow to represent the value of 1.0 and red to represent the value of 3.0. Orange is chosen for the value of 2.0.

Note: Query results with a larger spread will have more colors available to represent the color ranges from the minimum value to the maximum value.



Changing Transparency

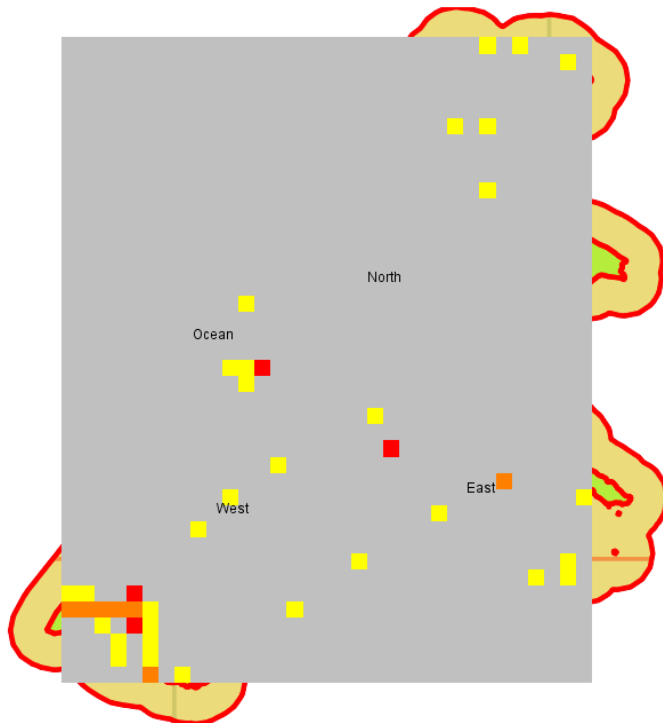
In the following example you will change the transparency for the grid cells that do not have any returned results.



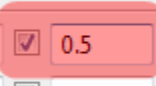




The screenshot shows a configuration window with two rows of settings. The first row has a light gray color swatch, a text field containing '-9999.0', a minus sign, another light gray color swatch, a text field containing '-9999.0', a checked checkbox, and a transparency slider set to 1.0. The second row has a yellow color swatch, a text field containing '1.0', a minus sign, a red color swatch, a text field containing '3.0', a checked checkbox, and a transparency slider set to 1.0. At the top of the window are buttons for '+', '-', and zoom controls.

- Change the colors for the null values (-9999) to a light gray.
- Change the transparency value from 0.0 to **1.0** to make the null values fully visible.
- Click **Apply**
- Click **OK**

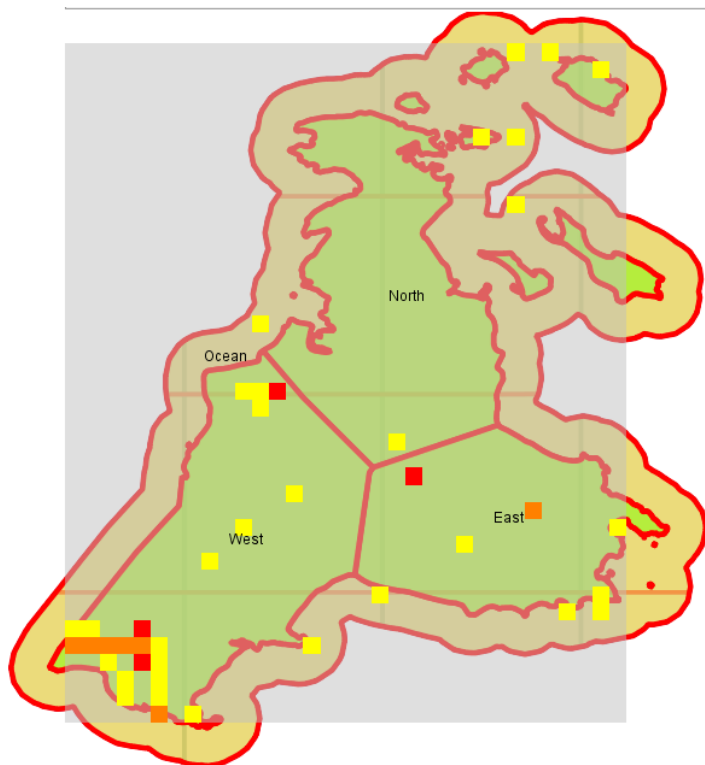
With the null values set to fully visible, the map is no longer as readable as before. The next step will be to make the null values partially visible, which will allow for the other map layers to be seen as well.



+		-		▲		▼	
	-9999.0	-		-9999.0	<input checked="" type="checkbox"/>	0.5	
	1.0	-		3.0	<input checked="" type="checkbox"/>	1.0	

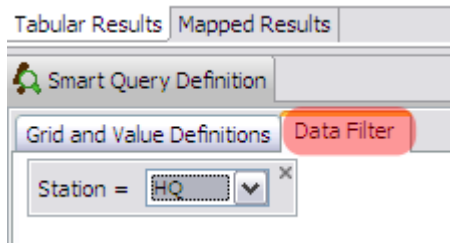
- Change the transparency value for the null values from 1.0 to **0.5** to make the null values partially visible.
- Click **Apply**
- Click **OK**

The styling now shows a fully visible layer of the returned results and a semi-transparent layer of the grid cells that did not have any returned observations.



Filtering a Query

A filter can be applied to the gridded summary using the same procedure as was done in Module 5: Queries and Summaries.



- In the SMART Query Definition window switch to the **Data Filter** tab
- Switch back to the **Query Filter** tab on the right side window instead of the Layers tab to select your data filters.
- Build a simple patrol query of **Station = HQ** as seen in the previous screenshot
- Run query

The results for the gridded analysis will now be filtered by the station query.

<End of Module 7 - Gridded Analysis>

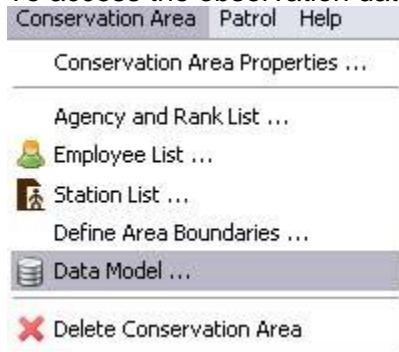
Module 8 – Data Model Management

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 modelling.

Detailed Steps:

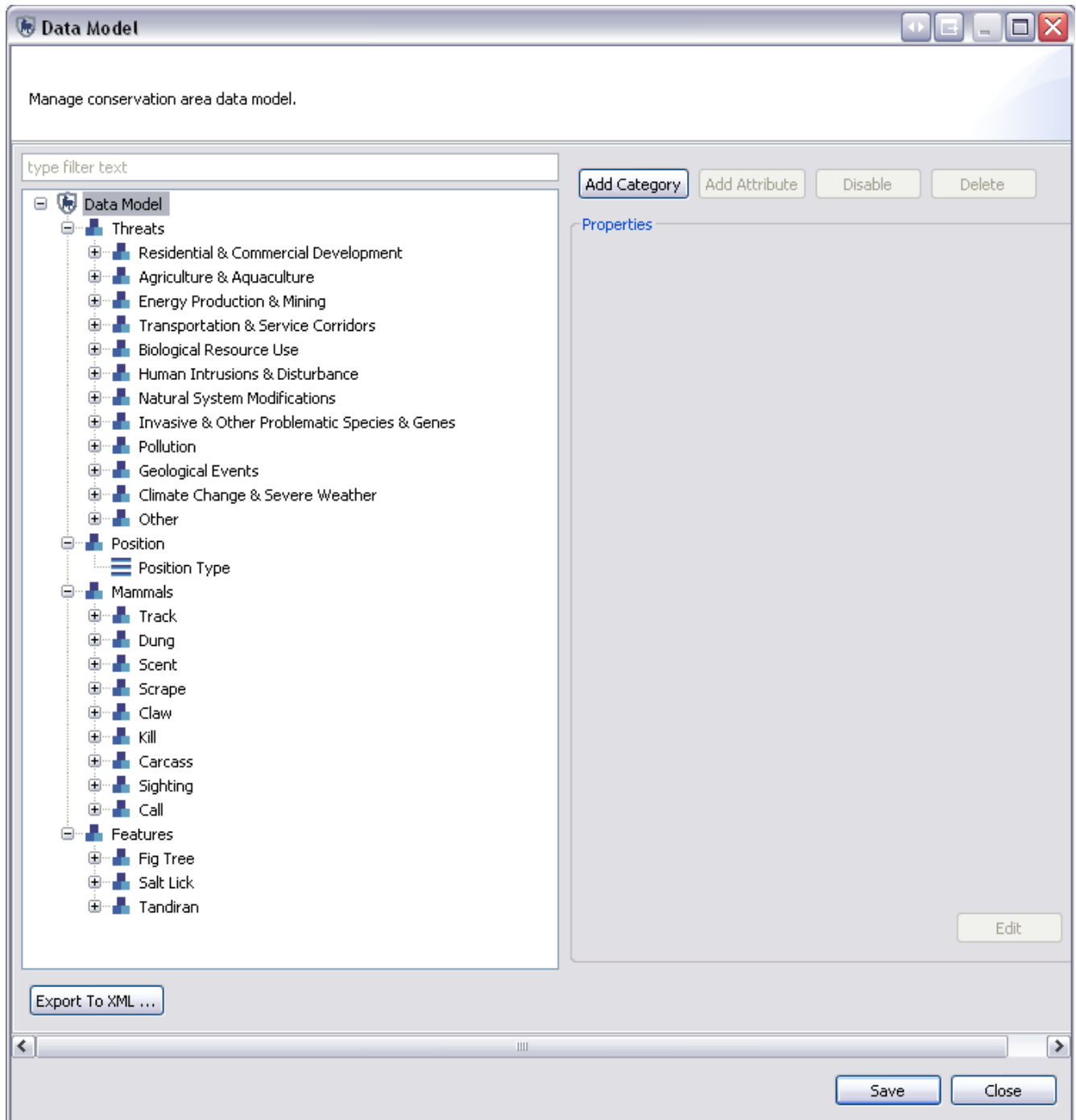
To access the observation data model:



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

Data Model Overview

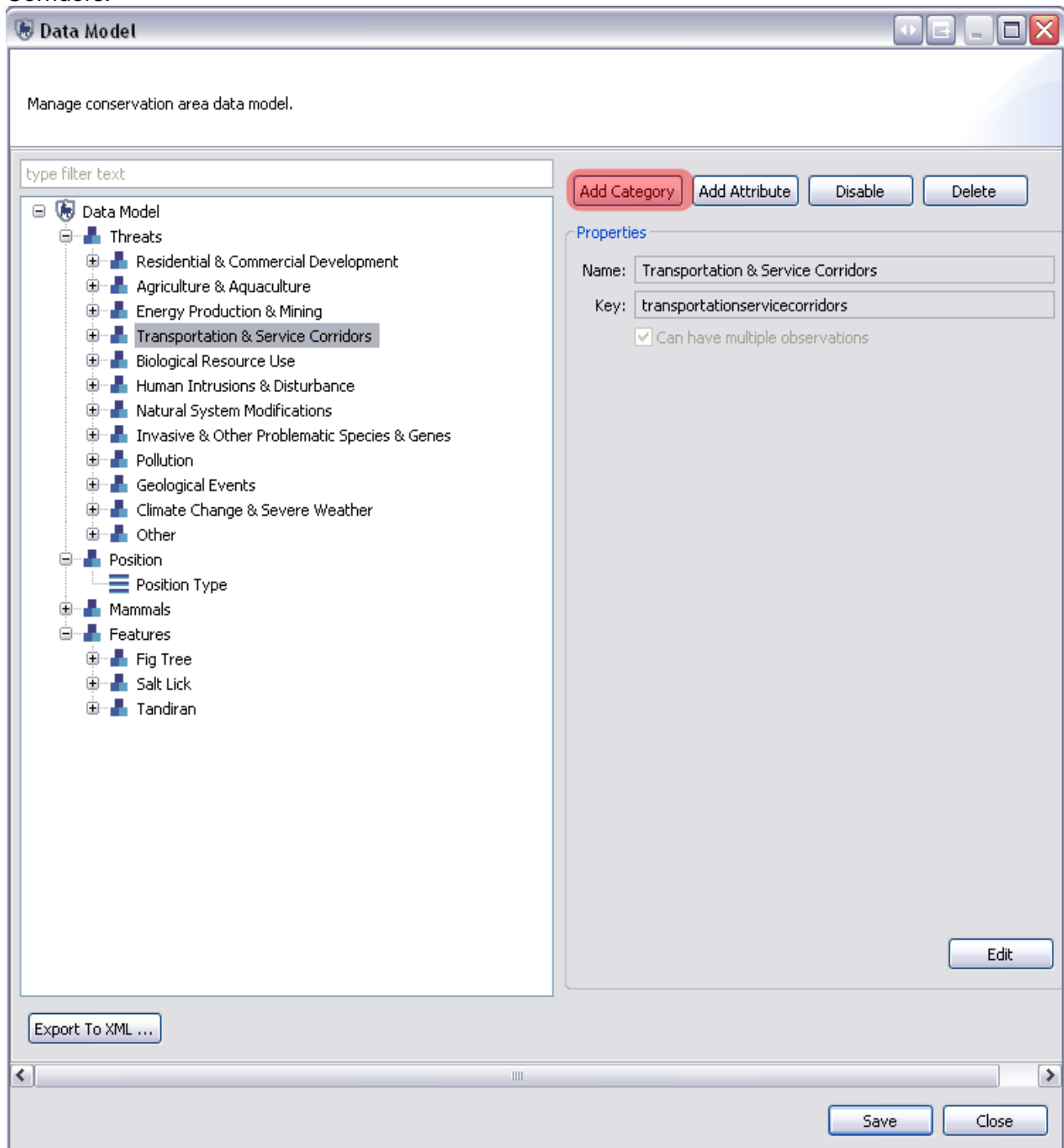
The SMART data model structure is based on a tree structure, comprised of nodes (Categories) and a series of custom attributes that can be associated to any portion of the tree's categories.



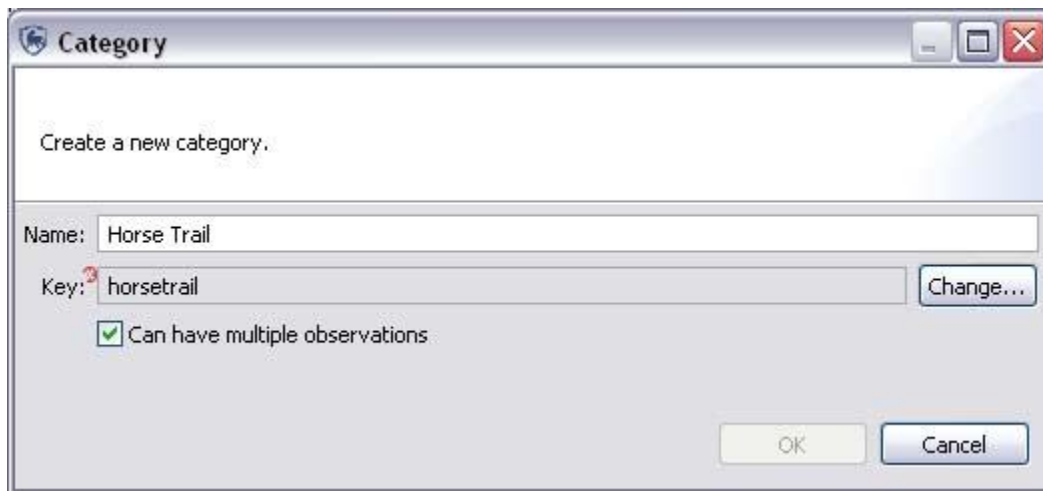
For this training module, you will use a custom data model that contains four high level nodes, namely Threats, Position, Mammals and Features. Below each of these four nodes, there will be varying levels of nested categories and associated attributes.

Adding 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, the new category will be one level below Transportation & Service Corridors.



- In the Data Model tree on the left, select **"Transportation & Service Corridors"**
- This will activate the buttons on the top right.
- Click **Add Category**



- Create a new category named “**Horse Trail**”. Allow the application to create the key “**horsetrail**”.
- Accept the default of “**Can have multiple observations**”
- Click **OK**

*Note: The **Key** is automatically created, and is a lower case concatenation of the category name with the spaces removed. This key can be edited by clicking on **Change...**, although this is not recommended.*

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

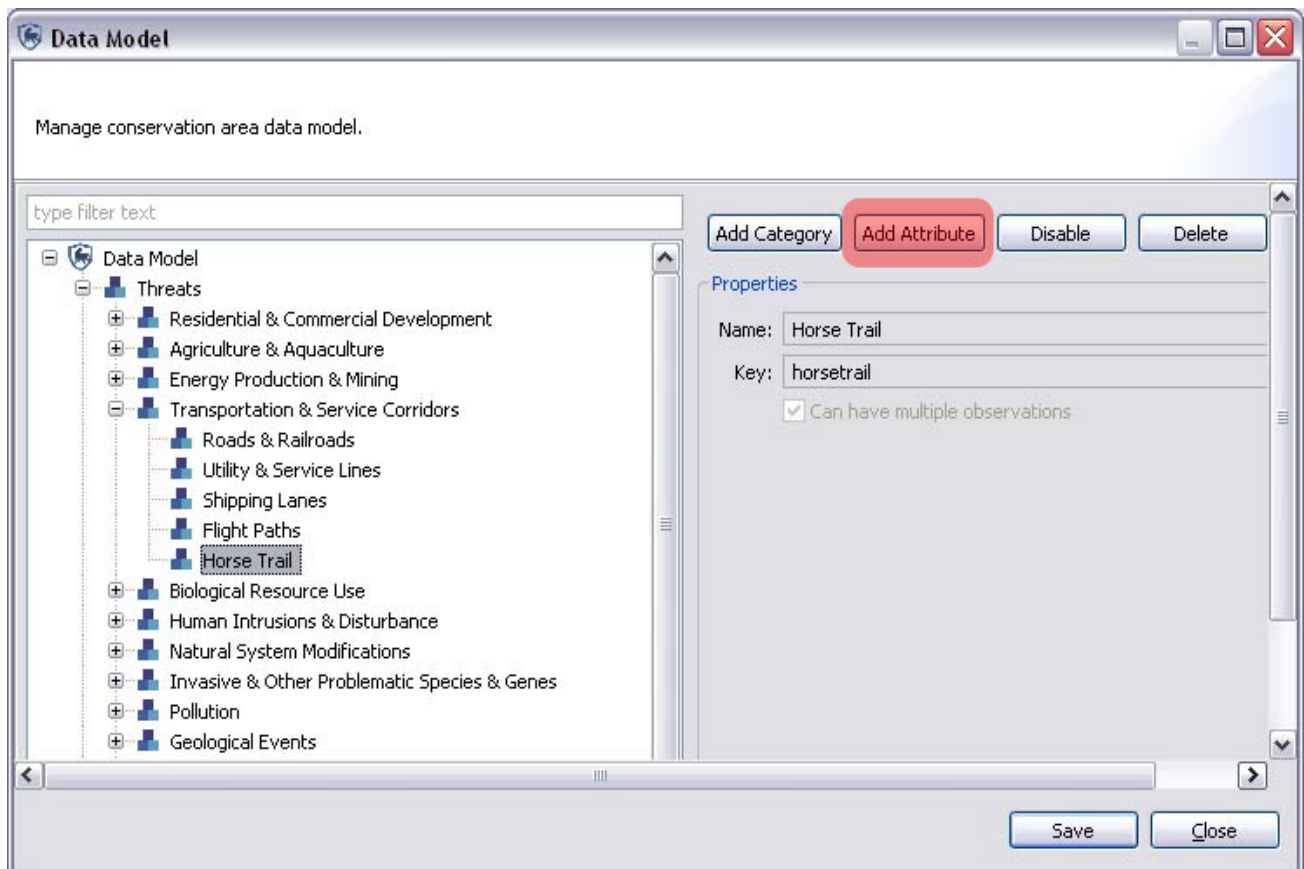
List - names of items where the list is known and the list is not too long

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

Under the category Horse Trail you will now add the first attribute using the attribute type List.



- The new category “Horse Trail” should appear under “Transportation and Service Corridors” in the data model.
- With “Horse Trail” selected, click **Add Attribute**

Add Attribute

Add a new attribute to 'Horse Trail'

Would you like to:

☒ Create a new attribute

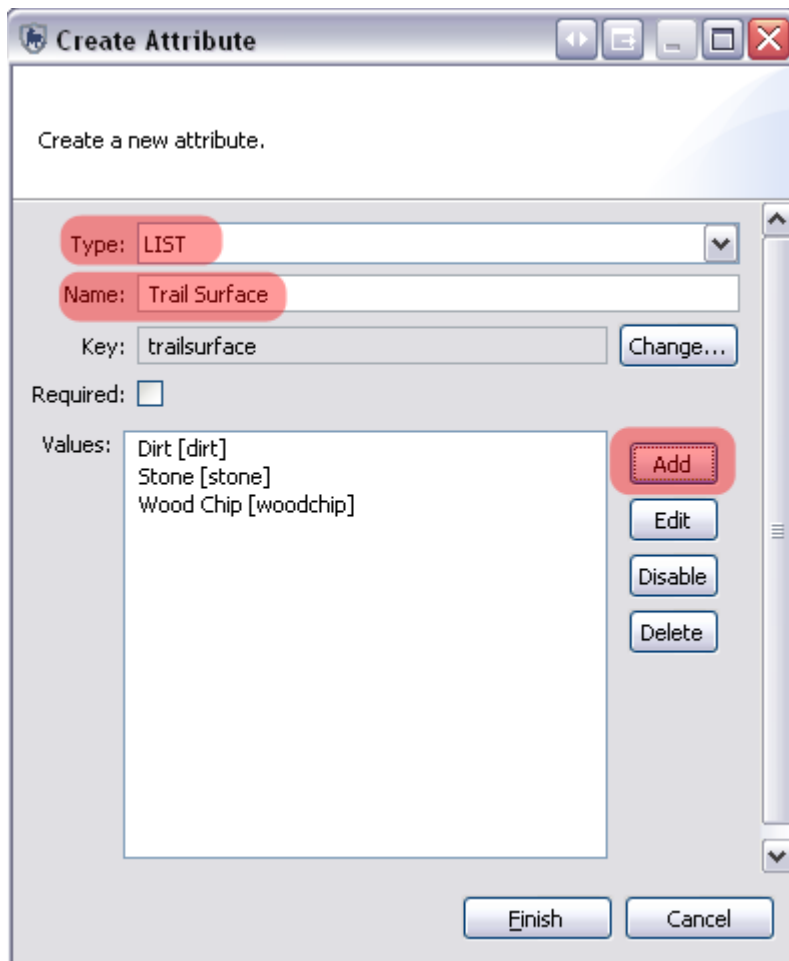
☐ Add existing attribute(s)

Select the attribute(s) to add:

- ☐ AB Length [ablength]
- ☐ AB Spread at Tips [abspreadattips]
- ☐ Action Taken [actiontaken]
- ☐ Ane of Animal [anenofanimal]

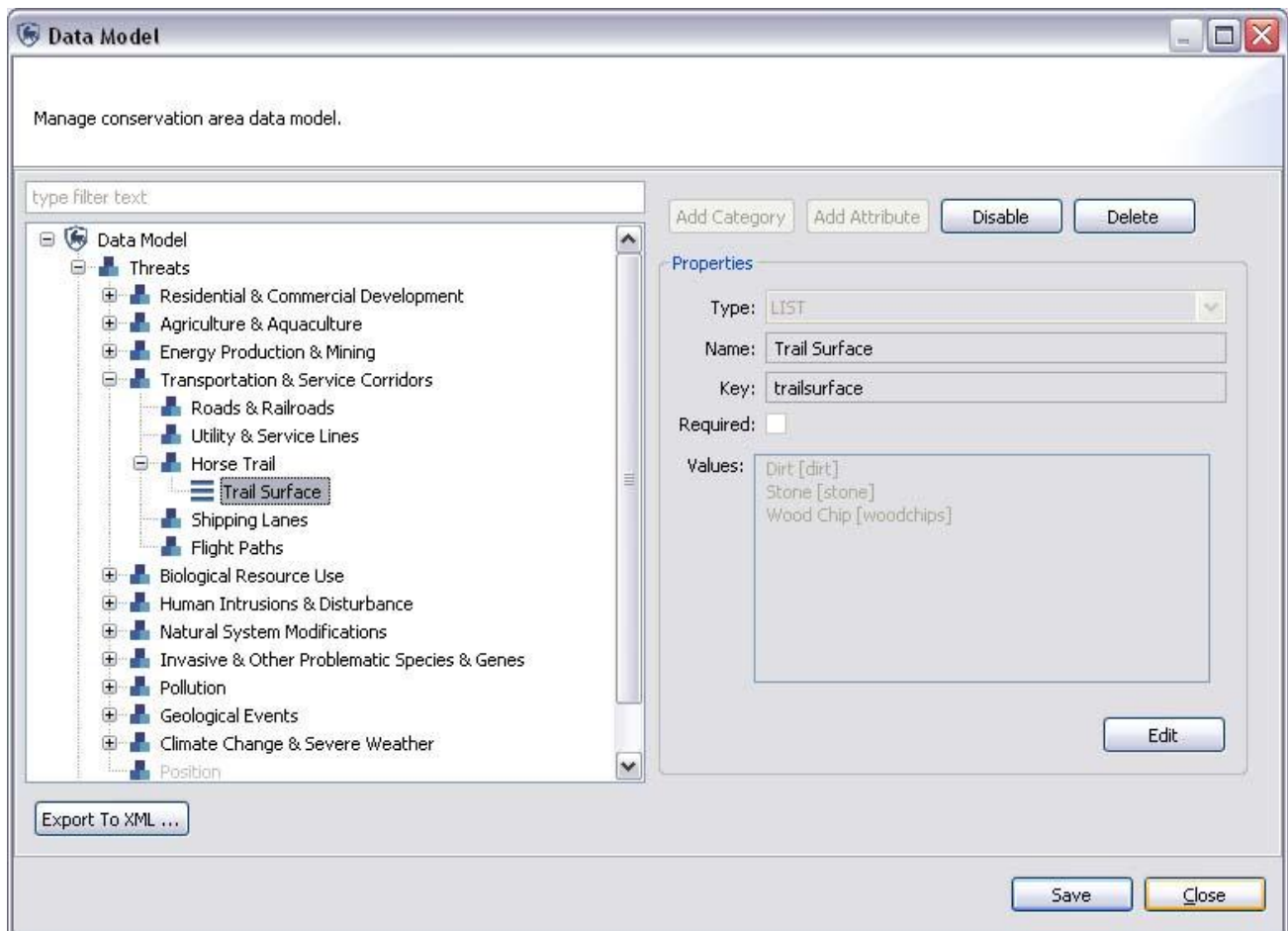
< Back Next > Finish Cancel

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



- Create a new attribute with
 - Type = **“LIST”**
 - Name = **“Trail Surface”**
 - Key = **“trailsurface”** (automatically populated)
 - Values = **“Dirt”**, **“Stone”**, **“Wood Chip”** (add them one at a time using the dialogue box that pops up when you click **“Add”**)
 - Click **Finish**

Note: The Required box (if checked) forces the attribute to be populated with an approved value before the observation record can be completed.



- The new attribute “Trail Surface” should appear as a List type under the category “Horse Trail”
- Click **Save** to save the changes to the data model
- Click **Close**

In the above screenshot you will see the newly created list attribute of Trail Surface. Under the category Horse Trail, you will now create a few more attributes using some of the other attribute types.

- Select the category **Horse Trail**
- Click **Add Attribute**
- Select **Create a new attribute**
- Click **Next**

The next category you will add is a numeric attribute to capture the width of the Horse Trail.

Create a new attribute.

Type: NUMERIC

Name: Width of Horse Trail

Key: widthofhorsetrail [Change...](#)

Required: ☐

Aggregations:

- ☒ Average
- ☒ Maximum
- ☒ Minimum
- ☒ Standard Deviation
- ☒ Sum

Minimum Value:

Maximum Value:

[Finish](#) [Cancel](#)

- Select **NUMERIC** for Type
- Enter in **"Width of Horse Trail"** for Name
- Check all Aggregations
- Click **Finish**

Note: When forming queries on numerical attributes, it will be possible to create queries using the Average, Minimum, Maximum, Sum and Standard Deviation values for that attribute. Only the Aggregations that are checked will be available for queries.

For the final attribute of Horse Trail, you will create an attribute to indicate if the trail was recently used. This attribute will be set as a Boolean.

Create Attribute

Edit the attribute.

Type: **BOOLEAN**

Name: Horse Trail Recently Used

Key: horsetrailrecentlyused [Change...](#)

Required: ☐

[Finish](#) [Cancel](#)

- Select **BOOLEAN** for Type
- Enter in "**Horse Trail Recently Used**" for Name
- Click **Finish**

Using Existing Attributes

In the previous steps, you added new attributes to the category of Horse Trail. SMART has the ability to apply existing attributes for ease of reuse and to allow for enhanced querying.

Add Attribute

Add a new attribute to 'Horse Trail'

Would you like to:

☐ Create a new attribute

☒ Add existing attribute(s)

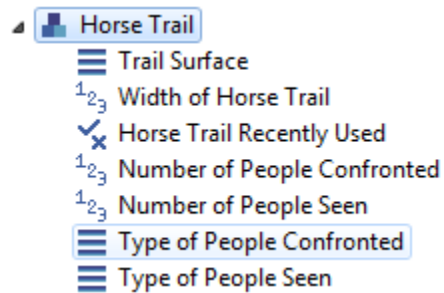
Select the attribute(s) to add:

- ☐ Number of Gunshots [numberofgunshots]
- ☐ Number of Logs Confiscated [numberoflogsconfiscated]
- ☐ Number of Logs Seen [numberoflogsseen]
- ☐ Number of Monk at Camp [numberofmonkatcamp]
- ☒ Number of People Confronted [numberofpeopleconfronted]
- ☒ Number of People Seen [numberofpeopleseen]
- ☐ Number of Pieces Confiscated [numberofpiecesconfiscated]
- ☐ Number of Pieces Seen [numberofpiecesseen]
- ☐ Number of Poaching Signs [numberofpoachingsigns]
- ☐ Number of Transportation Confiscated [numberoftransportationconfiscated]
- ☐ Number of Transportation Seen [numberoftransportationseen]
- ☐ Number of Tree Hide [numberoftreehide]
- ☐ Number of Trees Confiscated [numberoftreesconfiscated]
- ☐ Number of Trees Seen [numberoftreesseen]
- ☐ Number of Weapons Confiscated [numberofweaponsconfiscated]
- ☐ Number of Weapons Destroyed [numberofweaponsdestroyed]

< Back Next > Finish Cancel

- Select **Horse Trail** category
- Select **Add Attribute**
- Select **Add existing attribute(s)**
- From the list of attributes select:
 - **Number of People Confronted**
 - **Number of People Seen**
 - **Type of People Confronted**
 - **Type of People Seen**
- Click **Finish**

Under the your newly created category of Horse Trail you will see the list of new and existing attributes all applied to this category.



Disabling and Deleting Attributes

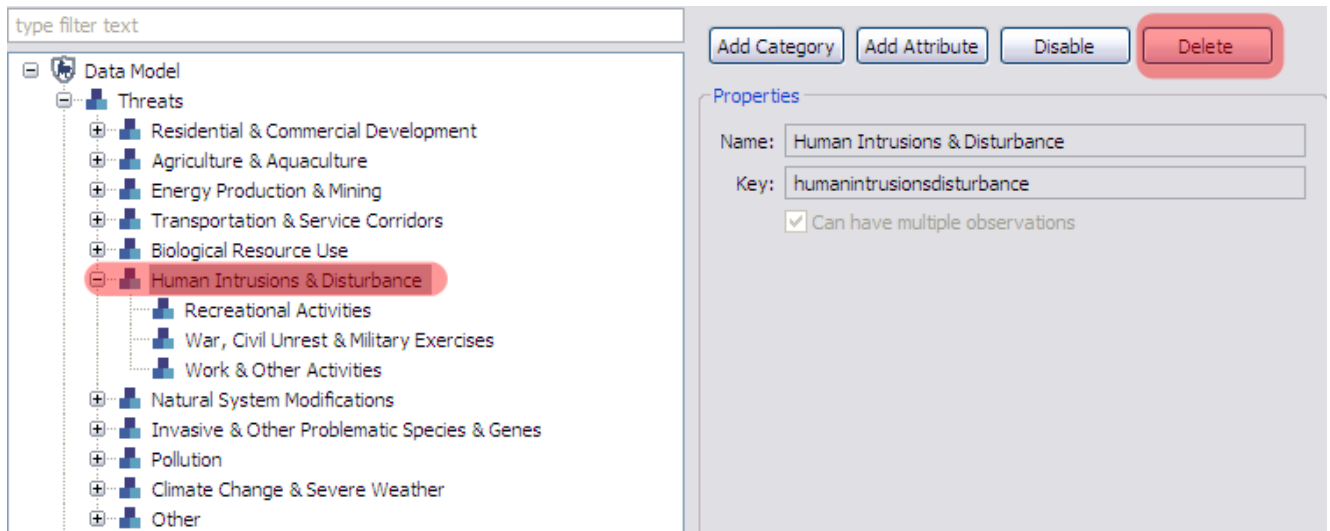
Categories, attributes or values within attributes can all be deleted from the data model, or disabled.

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.

Deleting Categories

Geologic events are out of scope for the training conservation area, and to simplify the model you will delete the category of Human Intrusions & Disturbance. To do this, you must delete the three sub-categories first, before deleting the category of Human Intrusions & Disturbance.



- Select Human Intrusions & Disturbance sub-category **Recreational Activities**
- Click **Delete**
- Click **OK** when prompted for confirmation
- Select **War, Civil Unrest & Military Exercises**
- Click **Delete** then **OK**
- Repeat for **Work & Other Activities**

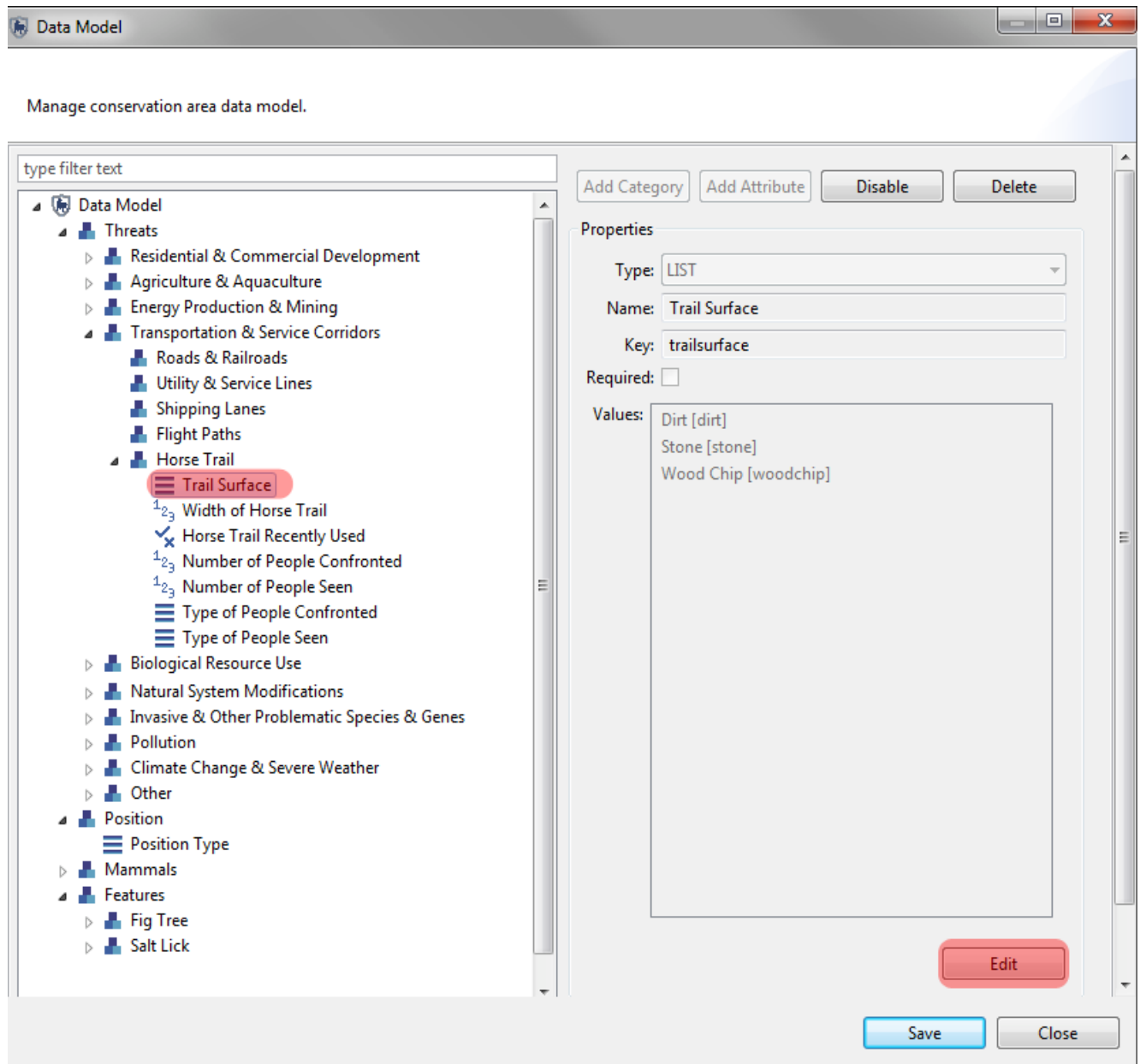
At this point you should still have the category of Human Intrusions & Disturbance, but with no sub-categories.

- Select the category of **Human Intrusions & Disturbance**
- Click **Delete** then **OK**

The category of Human Intrusions & Disturbance should no longer be present as a category under Threats.

Deleting Attribute Values

Attribute values in lists can be deleted in much the same way as categories.



- Select the attribute of **Trail Surface**
- Click **Edit**

Create Attribute

Edit the attribute.

Type: LIST

Name: Trail Surface

Key: trailsurface Change...

Required: ☐

Values:

Dirt [dirt]	Add
Stone [stone]	Edit
Wood Chip [woodchip]	Disable
	Delete

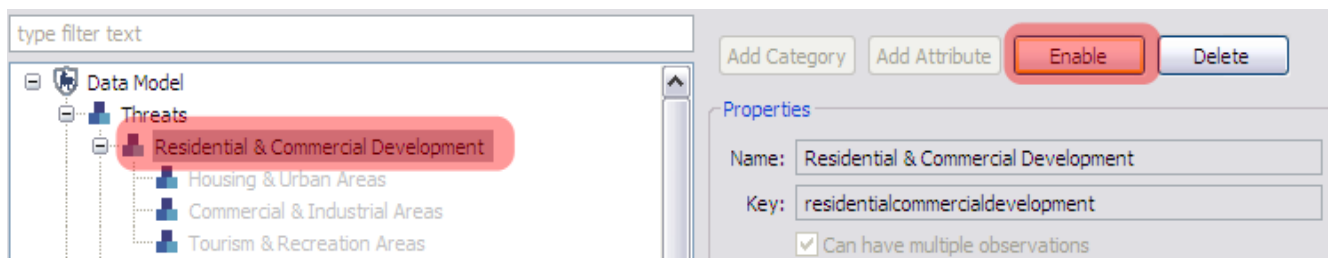
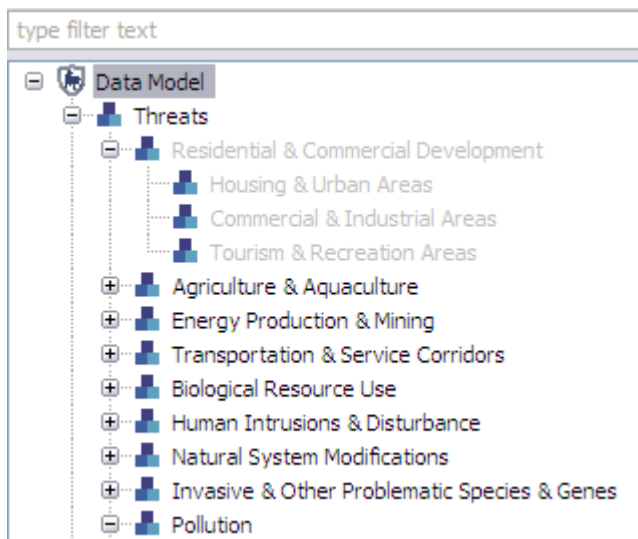
Finish Cancel

- Select the value of **Wood Chip**
- Click **Delete**
- Click **OK**
- Click **Finish**

Disabling / Enabling Categories

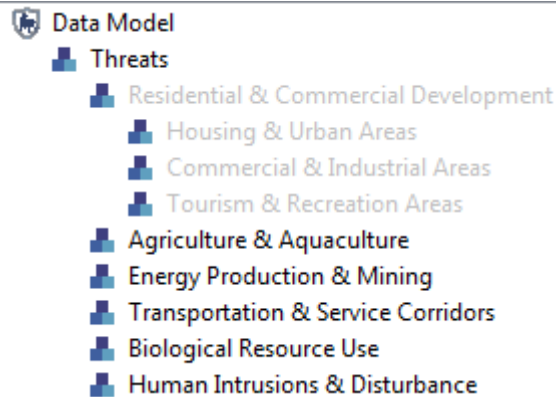
Disabling / Enabling categories is a much easier process because it does not require that all dependencies be disabled before proceeding with the higher level category. It also allows for reintroduction if the need arises.

In the data model the Category of Residential & Commercial Development along with its sub-categories is already disabled. You will enable it then disable it to see the entire process.



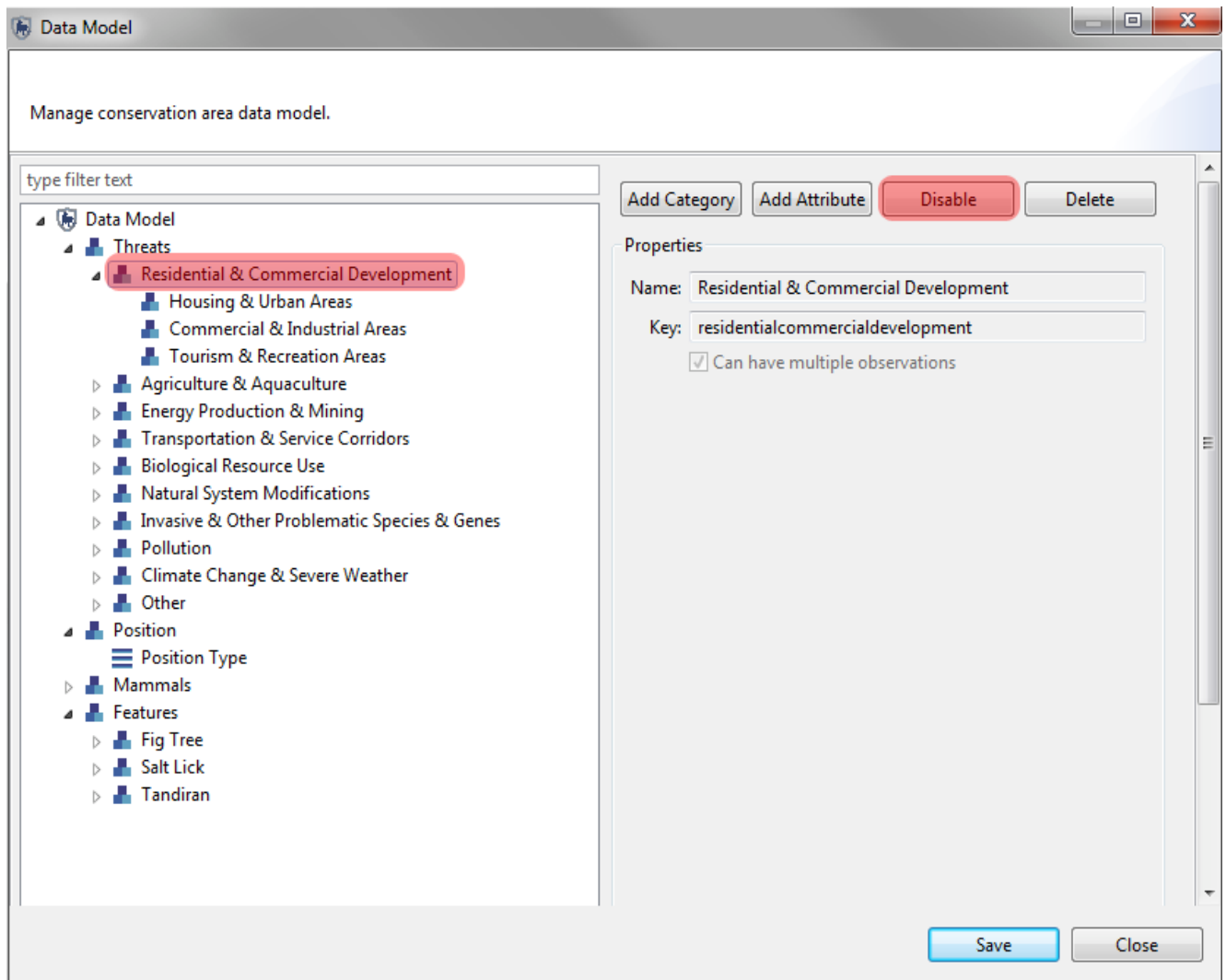
- Select the category of **Residential & Commercial Development**
- Click **Enable**

You will see that the category of Residential & Commercial Development text color has changed from a light gray to black. This indicates that the category has been enabled. The three sub-categories are still light gray indicating they are Disabled.



- Repeat the process of **Enabling** for the three sub-categories

Enabling has to be done one category at a time. Disabling is much faster and will automatically disable the sub-categories below it.



- Select the category of **Residential & Commercial Development**
- Click **Disable**
- Click **OK**

Attribute Inheritance

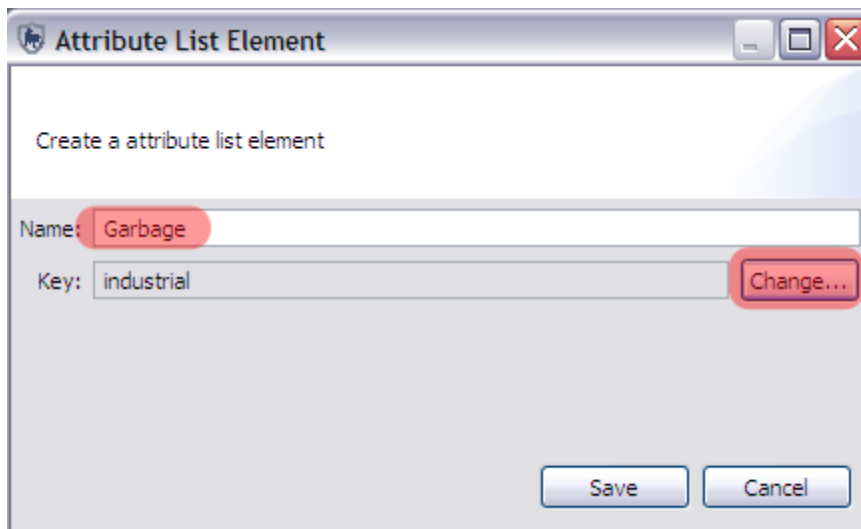
Attributes associated with higher level categories will be inherited by all of the following sub-categories. In this example, you will add an attribute of Pollution Type to the category of Pollution.

The screenshot shows the SMART Data Model editor interface. On the left, a tree view displays the hierarchy: Data Model > Threats > Pollution > Type of Pollution. The 'Type of Pollution' attribute is highlighted. On the right, the 'Properties' panel shows the following configuration:

- Type: LIST
- Name: Type of Pollution
- Key: typeofpollution
- Required: ☐
- Values: Domestic [domestic], Industrial [industrial], Unknown [unknown]

Buttons at the top include 'Add Category', 'Add Attribute', 'Disable', and 'Delete'. An 'Edit' button is at the bottom right of the Properties panel. An 'Export To XML ...' button is at the bottom left. 'Save' and 'Close' buttons are at the bottom right.

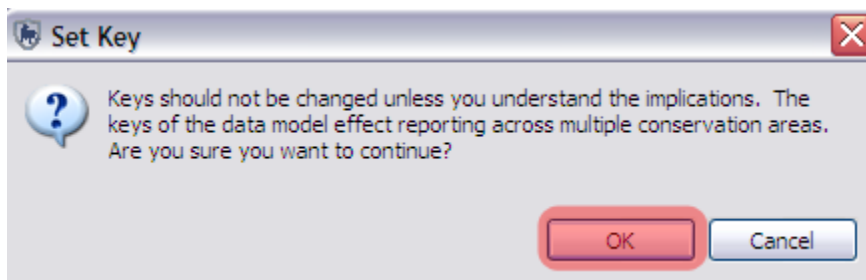
- In the category of Pollution select the attribute **Type of Pollution**
- Click **Edit**
- Select the attribute of **Domestic**
- Click **Delete**
- Click **OK**
- Select the attribute of **Industrial**
- Click **Edit**



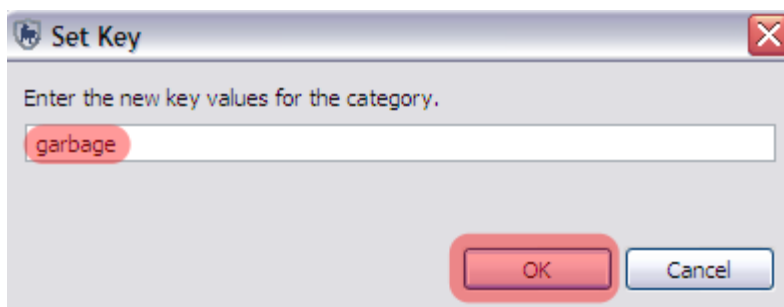
- Type in **Garbage** into the name field

This will change the visible name of the attribute but the database key will not change automatically.

- Click **Change** to change the name of the database key



- Click **OK**

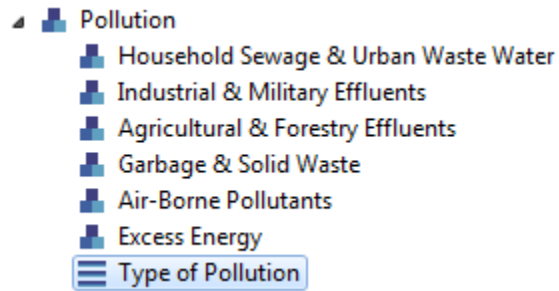


- Type in **garbage**
- Click **OK**
- Create two new attributes of:
 - **Chemical**
 - **Biological**
- After adding the two new attributes click **Finish**

- **Click Save to save your data model changes**

In the SMART data model tree you should see the attribute Type of Pollution on the same level as the sub-categories.

Note: This indicates that the attribute is associated with the parent category and is an inherited attribute of the six other sub-categories.



<End of Module 8 - Data Model Management>

Module 9 – Administrative Tasks

Objective:

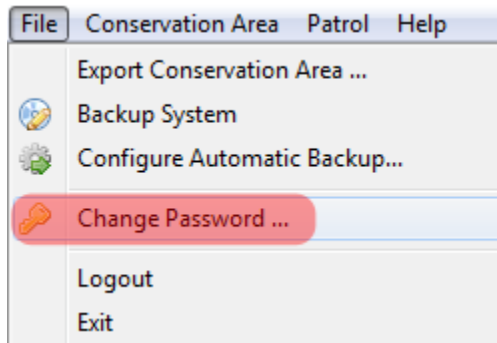
This Training Module will introduce you to a number of administrative functions to ensure a productive working environment in SMART. During this module, you will look at the export/importing capabilities, backing up and restoring of a conservation area, along with other best practices that will ensure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

- Changing Your Username and Password
- Exporting and Importing Patrols
- Exporting the Data Model
- Exporting and Importing a Conservation Area
- System Backup
- Configuring Automatic Backups
- Backing up and Restoring the Database
- Software Updates

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 Your Username and Password



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

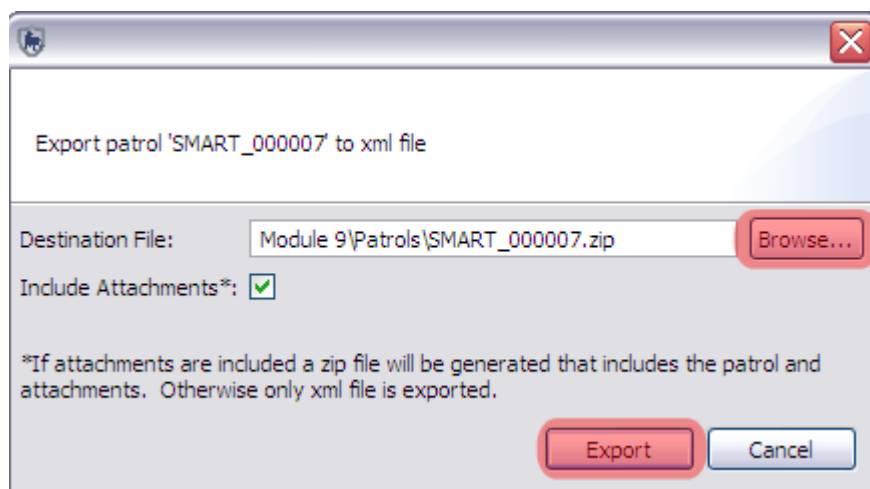
A screenshot of the 'Change username password.' dialog box. The dialog has a title bar with a close button. Inside, there is a message: 'To change your password enter your current password and your new password.' Below this, there are three input fields: 'Username:' with the text 'smarter', 'Current Password:' with masked characters, and 'New Password:' with masked characters. A 'Re-type New Password:' field also has masked characters. A red 'Change...' button is next to the username field. At the bottom, there are 'Save' and 'Close' buttons.

- 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**

Exporting and Importing Patrols

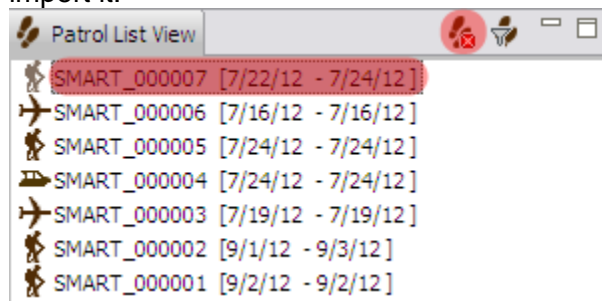
SMART's ability to Export and Import patrols allows for distributed data entry and reloading into a master system, as well as functioning as a backup file in the event of data loss.

- Change to the **Patrol Perspective**
- From the Patrol List View double-click the Patrol **SMART_000007** (select all-dates in the filter if you can't see the patrol), you need to open the patrol before you can export it.
- Click **Export Patrol**

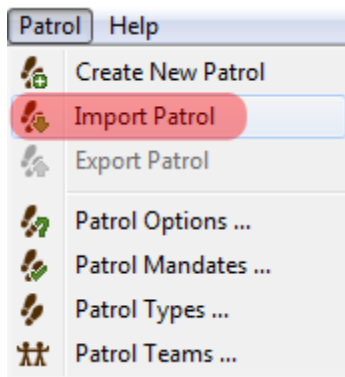


- Browse to folder **Module 9 \ Patrols**
- Use the default name
- Click **Save**
- Use the default of Include Attachments
- Click **Export**
- Click **OK**
- Verify that the file has been saved in the **Module 9 \ Patrols** folder

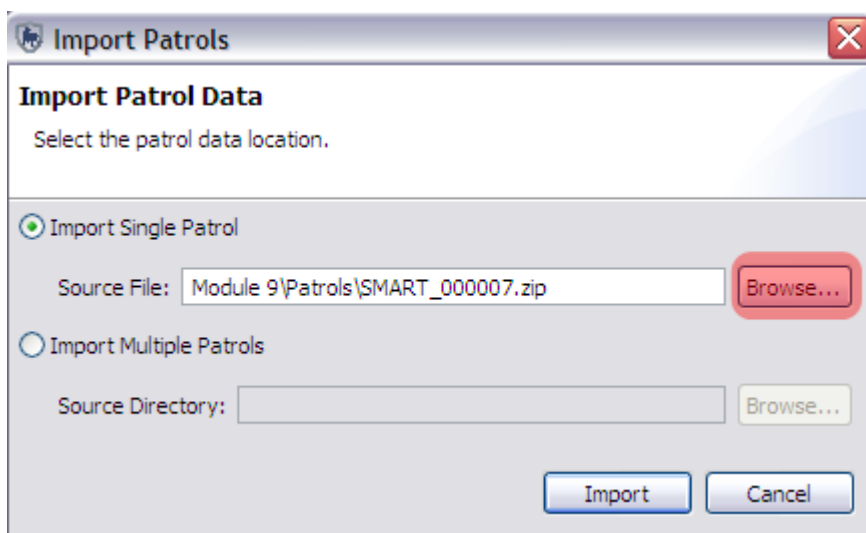
To test the import process, you will need to delete the Patrol TSMART_000007 before you import it.



- Select the Patrol **SMART_000007**
- Click the **Delete Patrol** icon
- On the confirmation screen click **OK**
- Click **OK** once more to complete the process



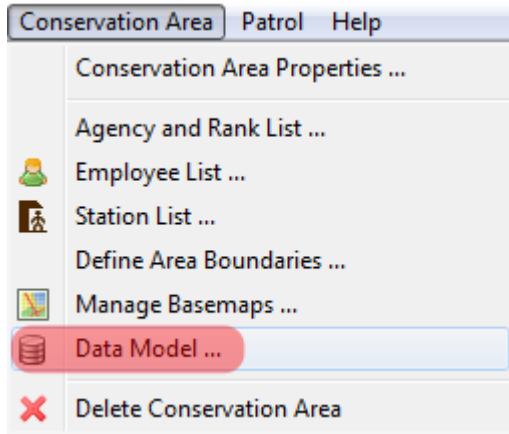
- From the menu select **Import Patrol**



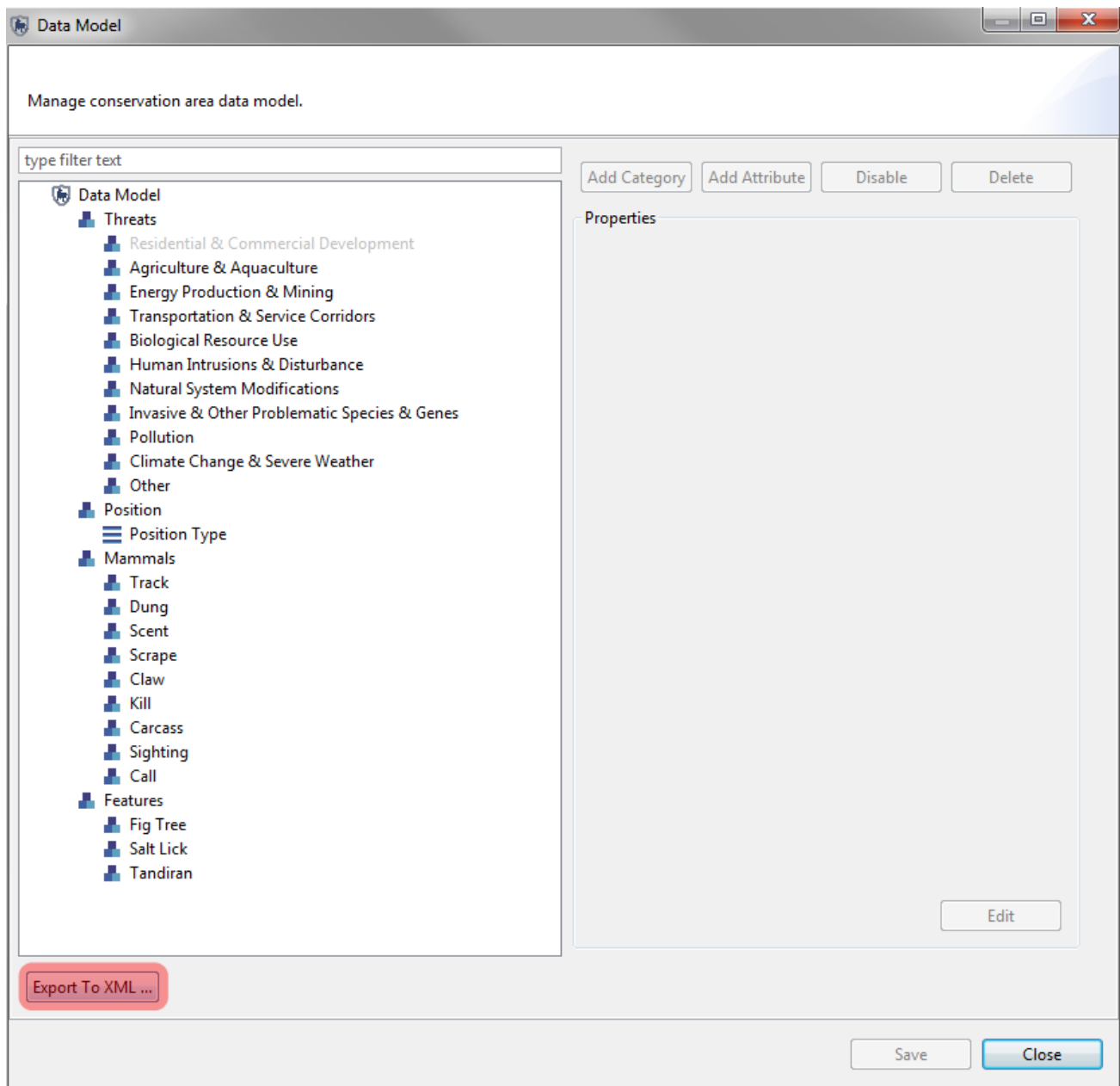
- Select **Import Single Patrol**
- Browse to the exported patrol file **SMART_000007.zip**
- Click **Import**
- Open patrol **SMART_000007** and review the contents of the patrol

Exporting the Data Model

To assist in distribution of a well designed data model or to protect against data loss, SMART can export the data model in a structured XML format. This XML file can be used to construct a new Conservation Area or to rebuild a corrupt Conservation Area.

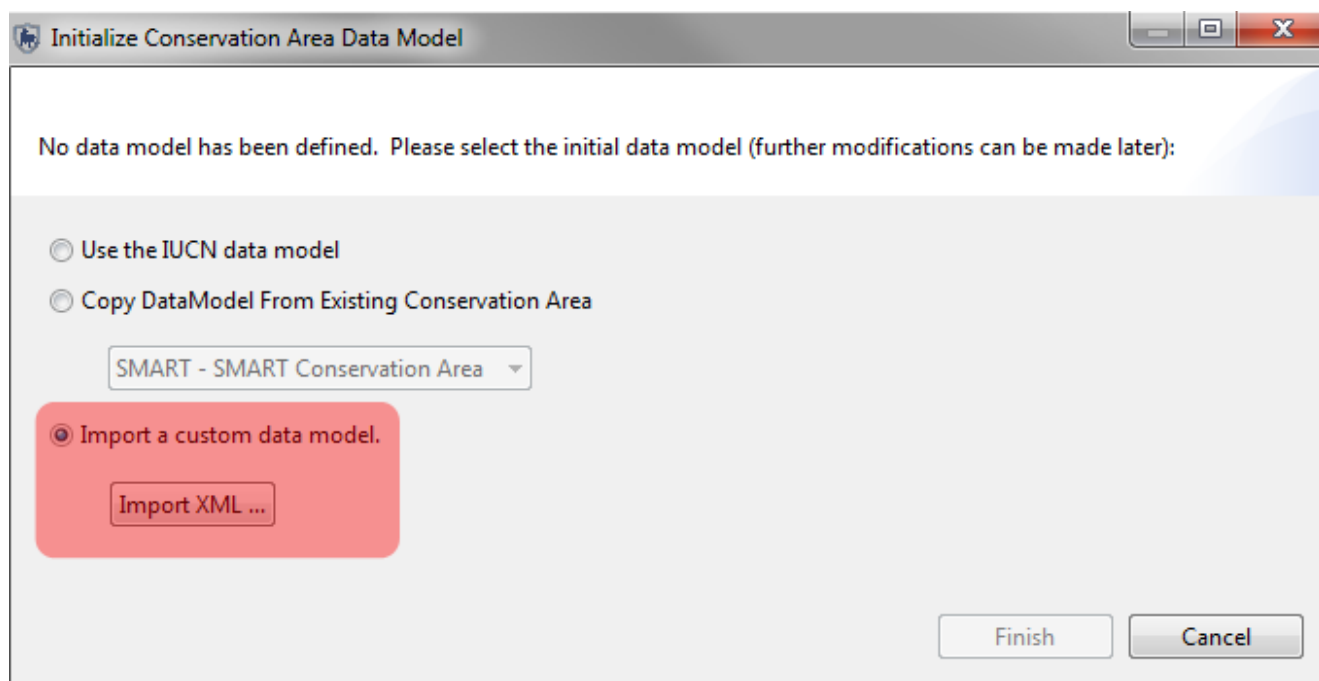


- In the Conservation Area menu select **Data Model ...**



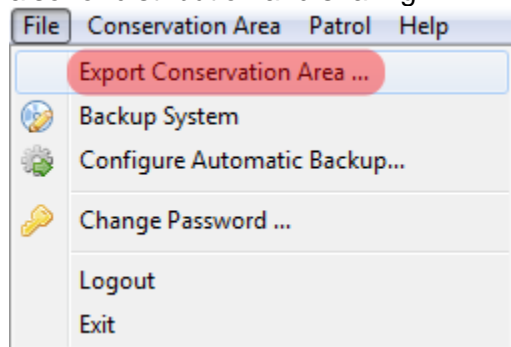
- Click **Export to XML ...**
- Browse to folder **Module 9 \ DataModel**
- Save file with filename **datamodel_export.xml**
- Click **OK**

In Module 1, you already went through the process of importing a custom data model, so there is no need to redo that exercise. The following screenshot is a review of the process at the point when the XML data model export file is brought into SMART.

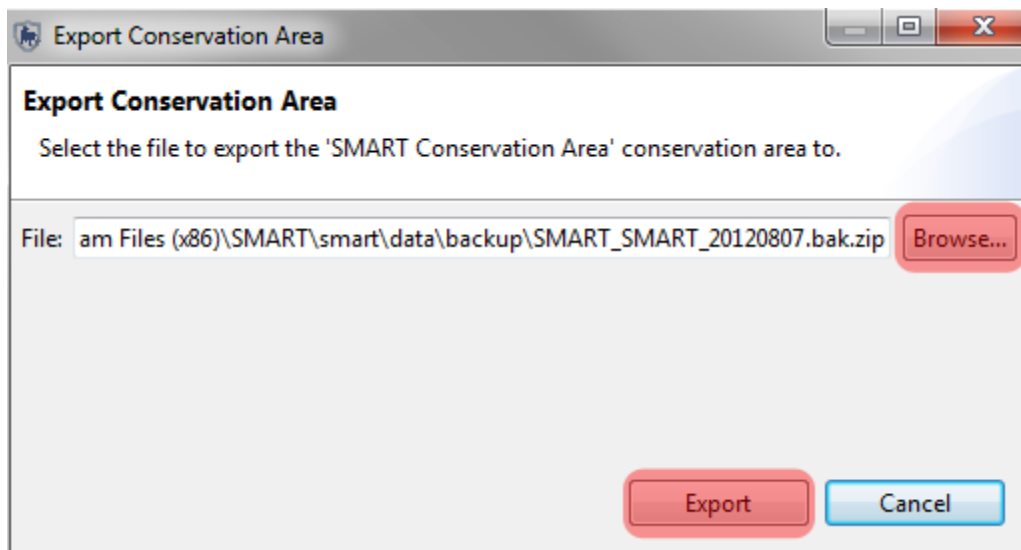


Exporting a Conservation Area

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.



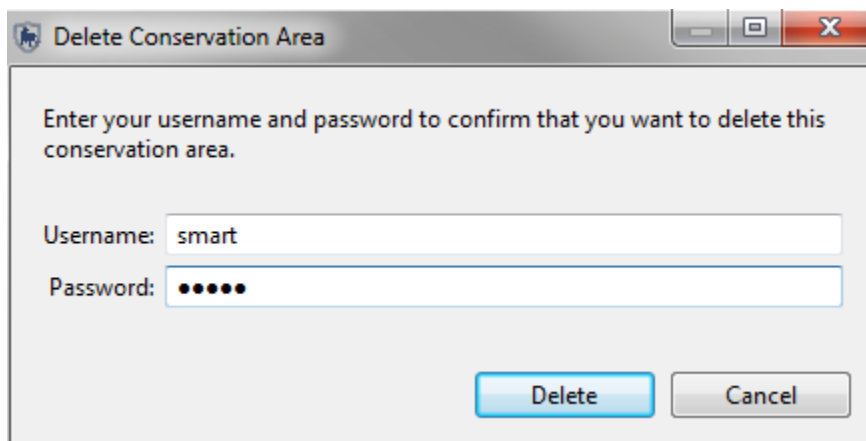
- From the File menu select **Export Conservation Area ...**



- Click **Browse...**
- Browse to the folder **Module 9 \ CA_Backup**
- Keep the default file name
- Click **Save**
- Click **Export**

To test the functionality of the Conservation Export and Import process, you will now delete the current Conservation Area.

- From the Conservation Area menu select **Delete Conservation Area ...**
- Click **OK** on the confirmation screen

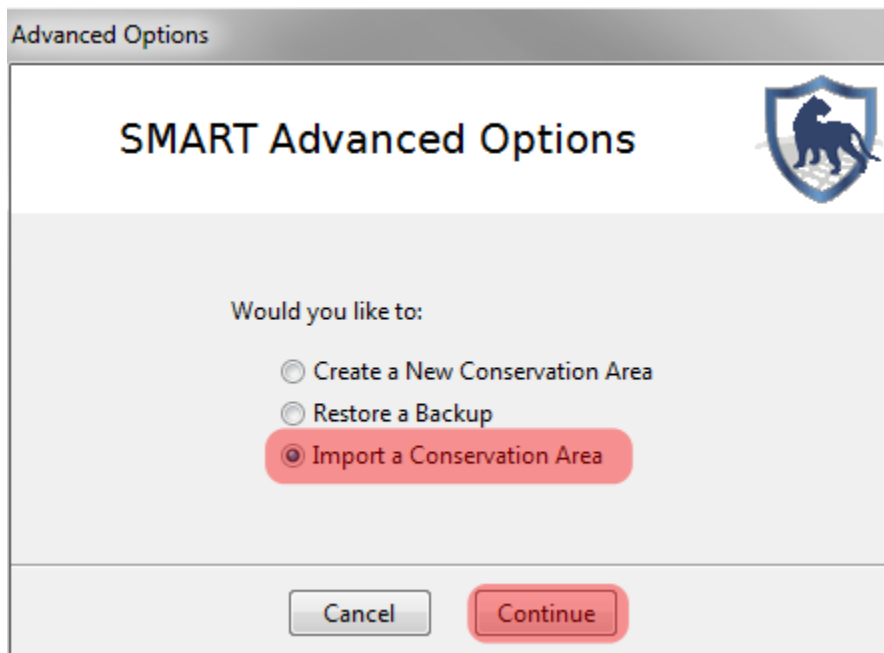


- Type in
 - Username = **smart**
 - Password = **smart**
- Click **Delete**

SMART will now restart the application and bring you back to the original log in screen.

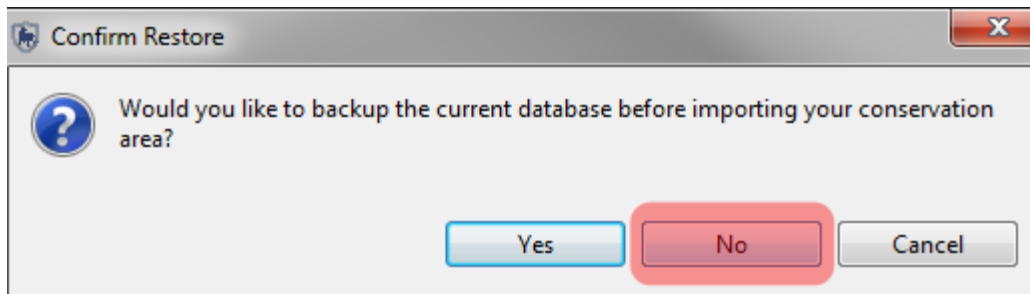


- Click **Advanced**

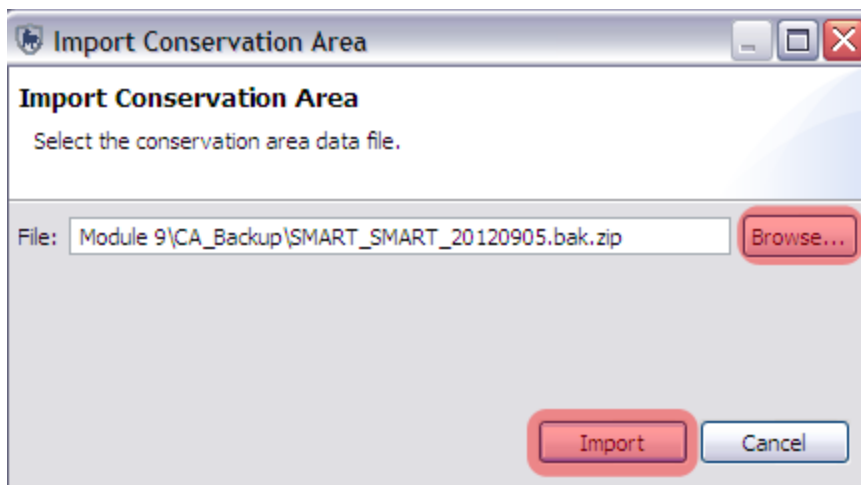


- Select **Import a Conservation Area**
- Click **Continue**

SMART will ask you if you would like to backup the existing database before importing a Conservation Area. For this example you will click **No** as there are no other Conservation Areas in the database to preserve.



- Click **No**



- Browse to folder **Module 9 \ CA_Backup**
- Select your backup file
- Click **Import**
- Once the import has completed click **OK**

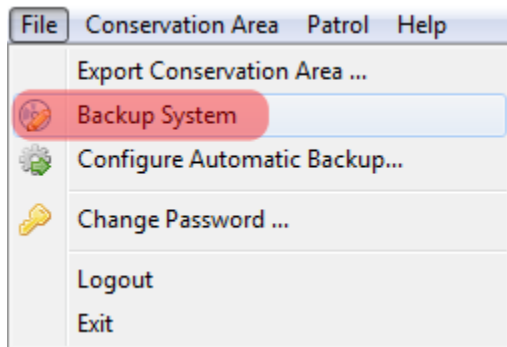


- Select the Conservation Area **SMART - SMART Conservation Area**
- Type in
 - User Name = **smart**
 - Password = **smart**
- Click **Login**

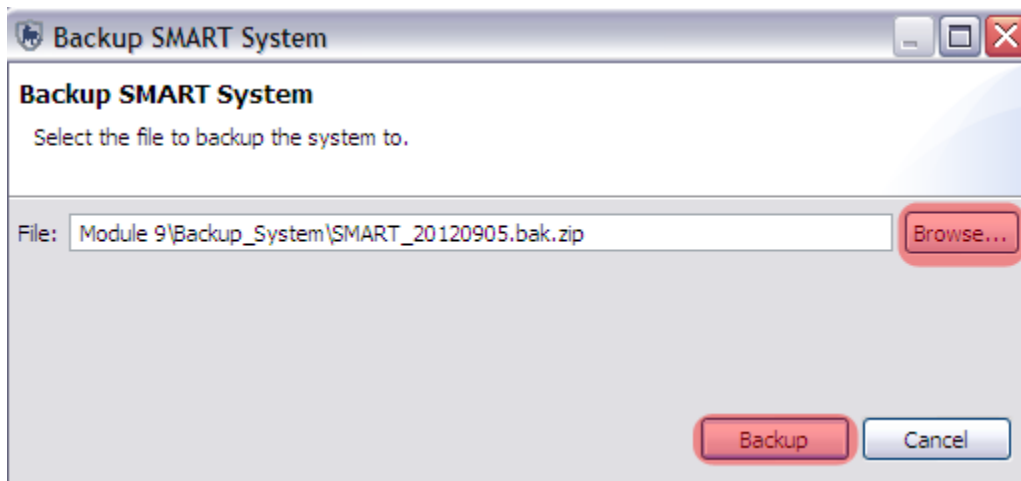
You should now see the SMART Map View of your newly imported Conservation Area.

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.



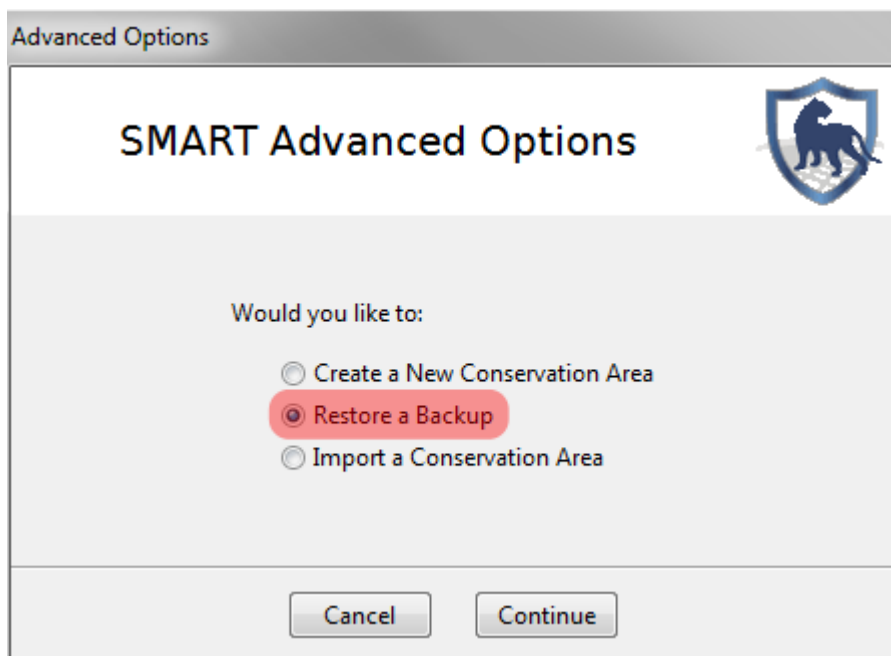
- In the File menu select **Backup System**



- Browse to the folder **Module 9 \ Backup_System**
- Keep the default file name
- Click **Backup**
- Once the process has completed click **OK**
- Browse to the folder **Module 9 \ Backup_System** 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.

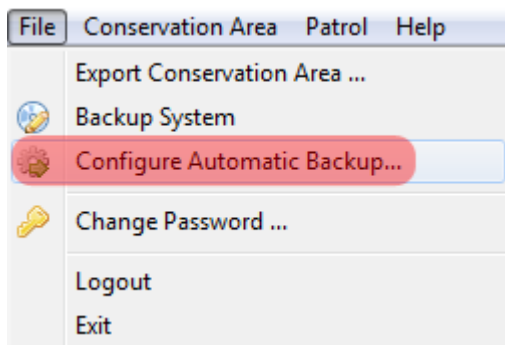
At this point you will not need to restore the entire database, but the following screenshot is a reminder of where the import would take place.



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 **Configure Automatic Backup...**

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

The screenshot shows a Windows-style dialog box titled "SMART System Automatic Backup Settings". It contains the following sections:

- Auto-Backup Configuration**: A header section with a description: "Each time the application is closed, the automatic backup system checks to see whether the specified time has passed and a backup is warranted. If so, the system will perform a backup."
- Frequency**: A question "How often would you like the system to perform an automatic backup?" followed by a text input field containing "-1" and the label "days*". A red box highlights the "-1". Below it is a note: "* Enter -1 to turn off auto-backup. Enter 0 to perform an auto-backup every time the application is closed."
- Delete Threshold**: A question "When should automatic backup files be deleted?" followed by a text input field containing "30" and the label "days". A red box highlights the "30".
- Backup Location**: A question "Where should automatic backup files be placed?" followed by a text input field containing "C:\Program Files (x86)\SMART\SMART_Backups" and a "Browse..." button. A red box highlights the text in the field.
- Buttons**: "Save" and "Cancel" buttons at the bottom right.

- Set the backup for **every 1 day**
- 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

<End of Module 9 - Administrative Tasks>

Appendix A – Simple Data Collection Sheet

Date: _____

Patrol Team Members: _____ , _____ , _____ ,
_____ , _____ , _____ , _____

Waypoint #	Observation	Comments