



SMART 7 new features



Photo Credits: WCS

1. SMART 7 - What is new in SMART?

1.1 OVERVIEW

SMART is a holistic protected area management system, including mobile, desktop, and online platforms, with a wide range of applications in conservation practice (figure 1). Our tools are developed and extensively tested through an interactive process with field practitioners in conservation areas around the world. This development and testing process is part of the SMART's long-term commitment to support protected area field staff with convenient, reliable and user-friendly tools that address real needs, as well as ongoing support and training for users globally.

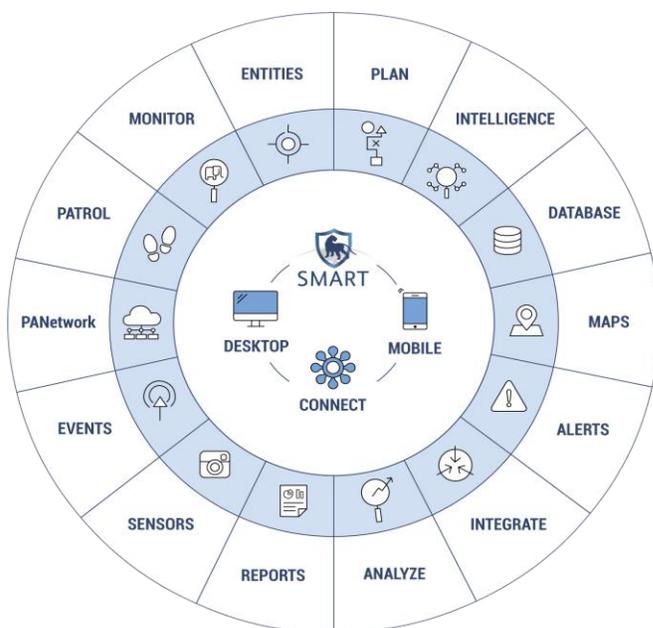


Figure 1 - SMART platform and range of applications.

We continue to improve our tools to support our users globally. As part of the process, SMART's latest upgrade - SMART 7 to be released in 2021 will bring a number of key innovations to users. These include:

- Predictive Patrol planning - machine learning support for patrol planning
- SMART Collect - our citizen science tool
- Integrate - ability to integrate a range of sensors and data with SMART
- UX - Fresh look and feel and overall improved user experience
- Enhanced mobile data collection
- Multiple profiles
- Range of desktop improvements

2. New features in detail

2.1 PREDICTIVE PATROL PLANNING

SMART Predictive Patrol Planning is a packaged version of The Protection Assistant for Wildlife Security (PAWS), an artificial intelligence (AI) software for wildlife protection, for the SMART toolbox. This innovative tool helps conservation managers plan more informed patrol strategies to combat poaching. SMART Predictive Patrol Planning uses machine learning to predict poachers' behavior based on past patrol records and data about the physical and human geography of the protected area. The system builds a custom AI model for each protected area to develop poaching risk maps and to flag priority areas for patrolling.

SMART Predictive Patrol Planning is a collaboration between Harvard University, Microsoft and the SMART partnership, supported by COMIFAC. Through SMART, this tool will become available to parks around the world. A beta version of the tool will be available with the release of SMART 7 in 2021

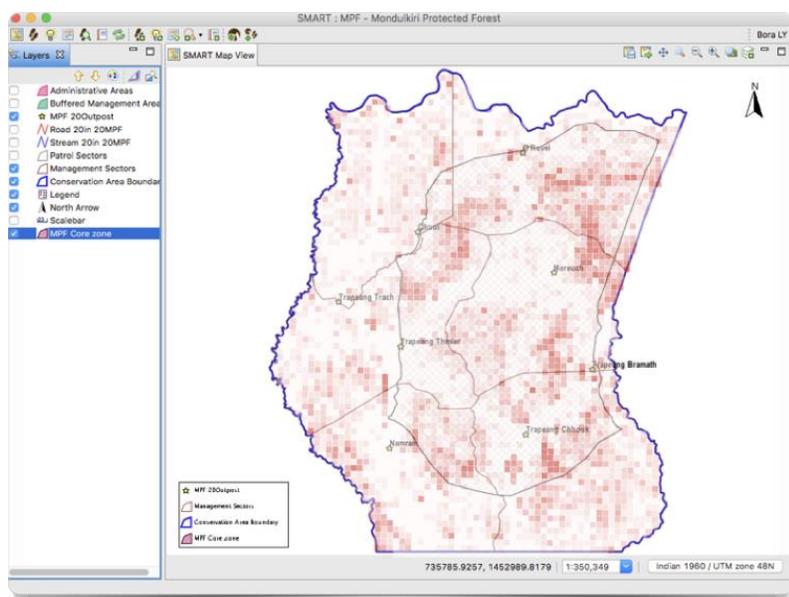


Figure 2 - screenshot of predictive patrol planning risk map in SMART

SMART Predictive Patrol Planning has been updated and include new functionalities:

- Ability to add raster images, including land cover and elevation
- Filter by patrol transport type(s)
- Filter by patrol mandate type(s)
- Faster processing and reduced cloud computing cost

We are also exploring potential functionalities available to automatically add remote sensing imagery (which would provide several additional rasters including elevation, land cover, temperature, precipitation, water sources, and more).

Case study: Srepok Wildlife Sanctuary

Field tests were conducted in Srepok Wildlife Sanctuary in Cambodia.

Predictive Patrol Planning makes good predictions: Rangers found many more snares in high-risk regions than medium-risk regions, and no snares in low-risk regions.

Predictive Patrol Planning is effective: In one month, rangers detected and removed 1,000 snares, 42 chainsaws, 24 motorbikes, and one truck.



Credits: Lily Xu - Harvard

2.2 SMART COLLECT - data collection for communities, citizen science and beyond

SMART Collect is a version of SMART Mobile designed, not for patrolling, but for remote data collection such as citizen science and community reporting projects. It works by allowing data collectors to download configured SMART data models from a server, using SMART Connect. The data officer / administrator simply creates a configurable model and uploads it to a Connect server which is subsequently downloaded by data collectors. Data are then collected and sent, via the server, to the SMART database.

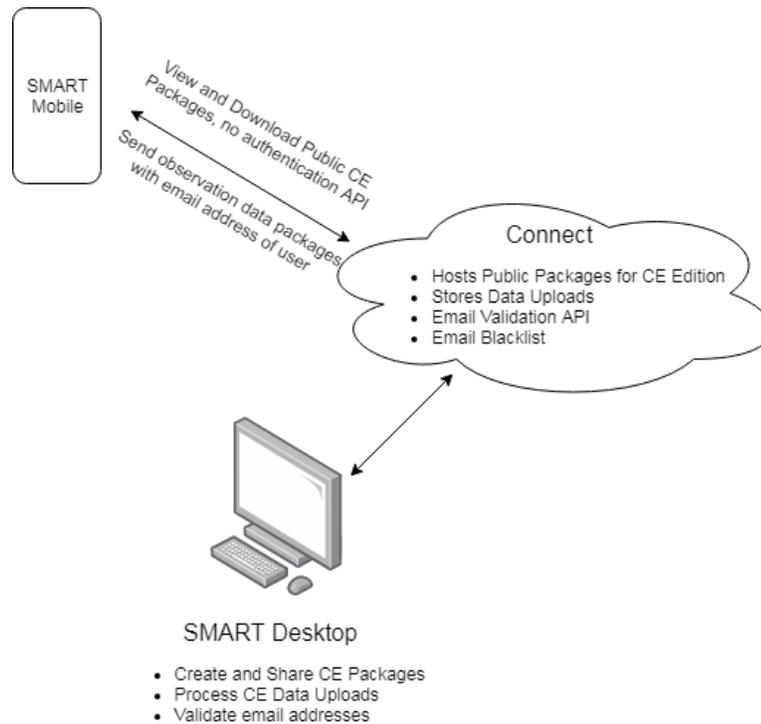


Figure 3 - SMART Collect workflow

SMART Collect will assist a range of community and other standalone use cases including:

- Fishermen reporting catch or illegal fishing
- Citizen science in and around Conservation Areas
- Reporting human-wildlife conflict in a village
- Tracking of small-scale fishing boat

2.3 SMART Integrate - ability to integrate a range of sensors and data with SMART

SMART Integrate is a collaboration between SMART and EarthRanger to create a more powerful, end-to-end protected area management platform - combining traditional law enforcement monitoring, real time operations, biological monitoring and intelligence.

SMART Integrate brings together a coalition of sensor technology providers and users to create a tool that will provide a number of out-of-the-box integrations with field sensors, allowing data to be made available in the SMART, EarthRanger and other conservation applications. SMART Integrate's vision is to simplify the deployment of sensors into protected areas.

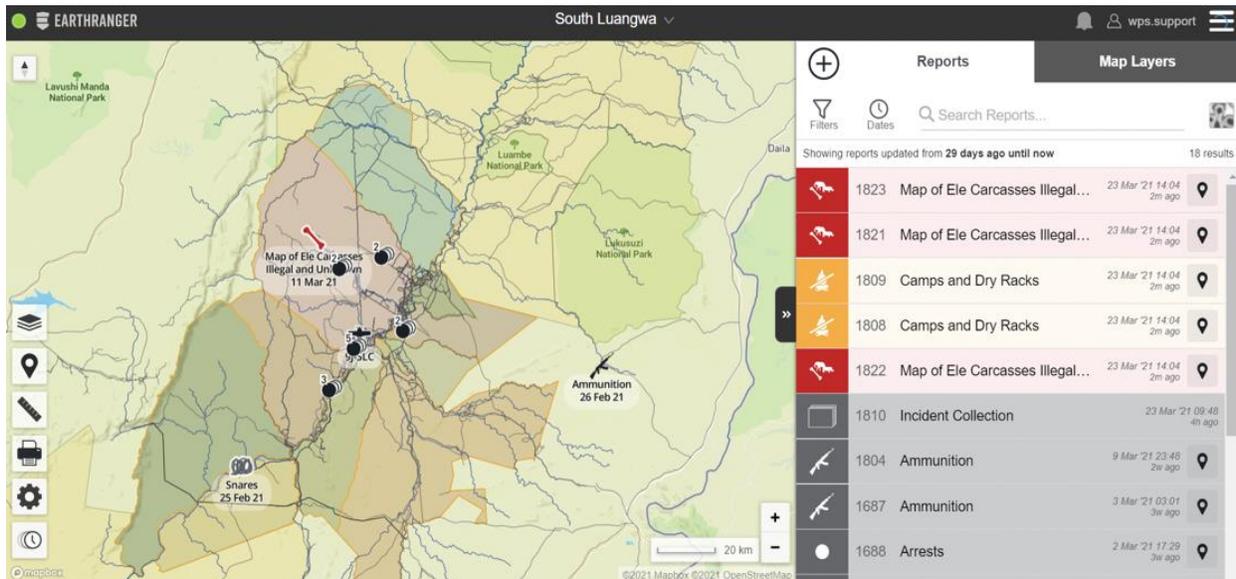


Figure 4 - SMART reports feeding into EarthRanger (credits: Xia Stevens)

SMART Integrate is an easy to set-up and user-friendly way to integrate sensors and data, reducing the need for multiple apps, redundancy, lack of data standards and other challenges.

How can SMART Integrate help you?

- For protected area managers, SMART Integrate allows you to use wildlife data collected by your animal tracking collars in the field and directly plug this information as an input to your predictive patrol data model or other SMART applications.
- For rangers, SMART Integrate will allow Rangers to view multiple alerts such as Global Forest Watch's GLAD Forest Alerts and Fire Alerts right on my mobile device, providing me with critical data to help me adaptively manage my patrol

2.4 UX - Fresh look and feel and overall improved user experience

SMART 7 has a brand new and fresh User Interface, including over 1000 new icons covering different attributes from wildlife to a range of different activities.

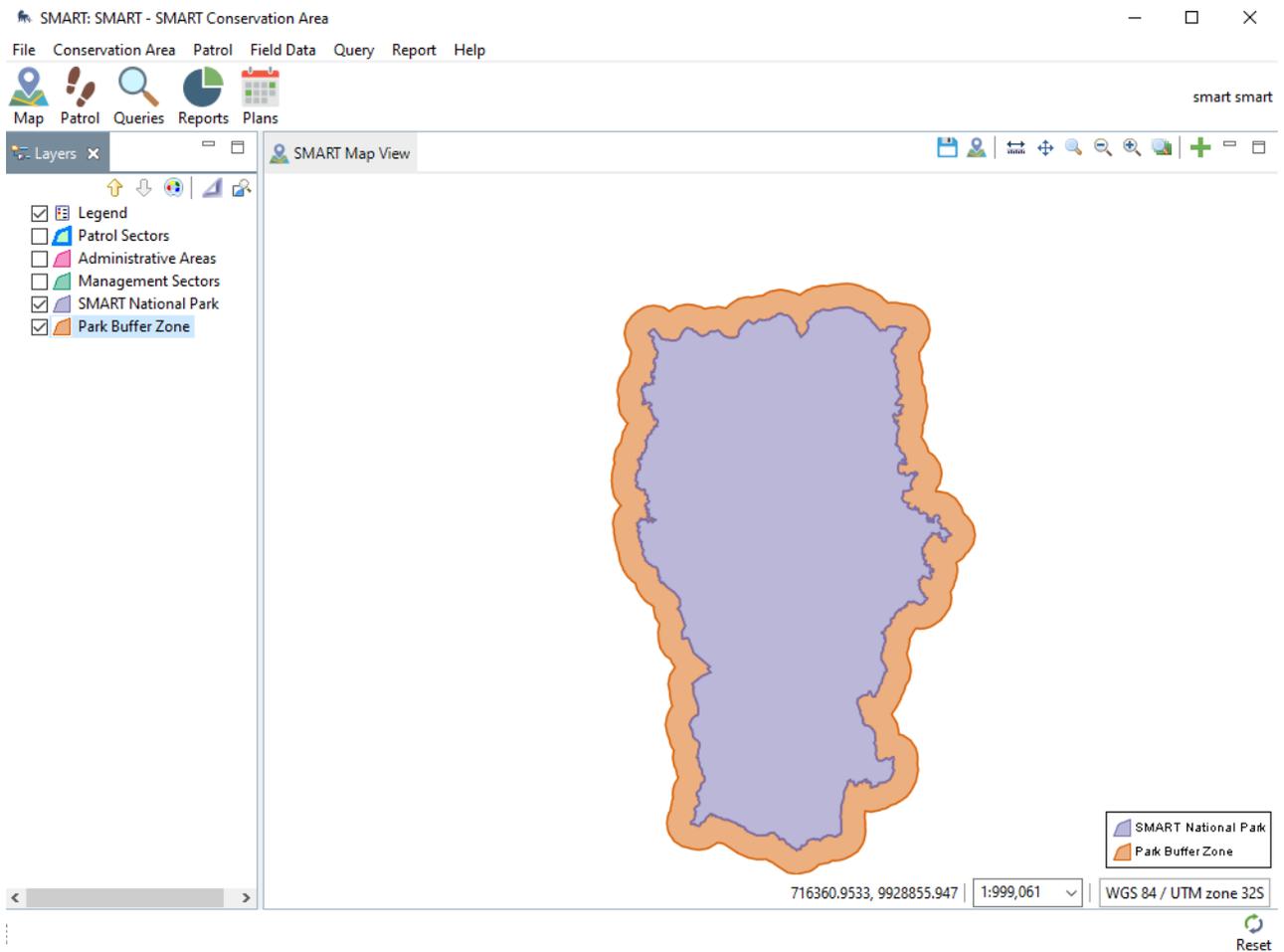


Figure 5 - SMART 7 new UX

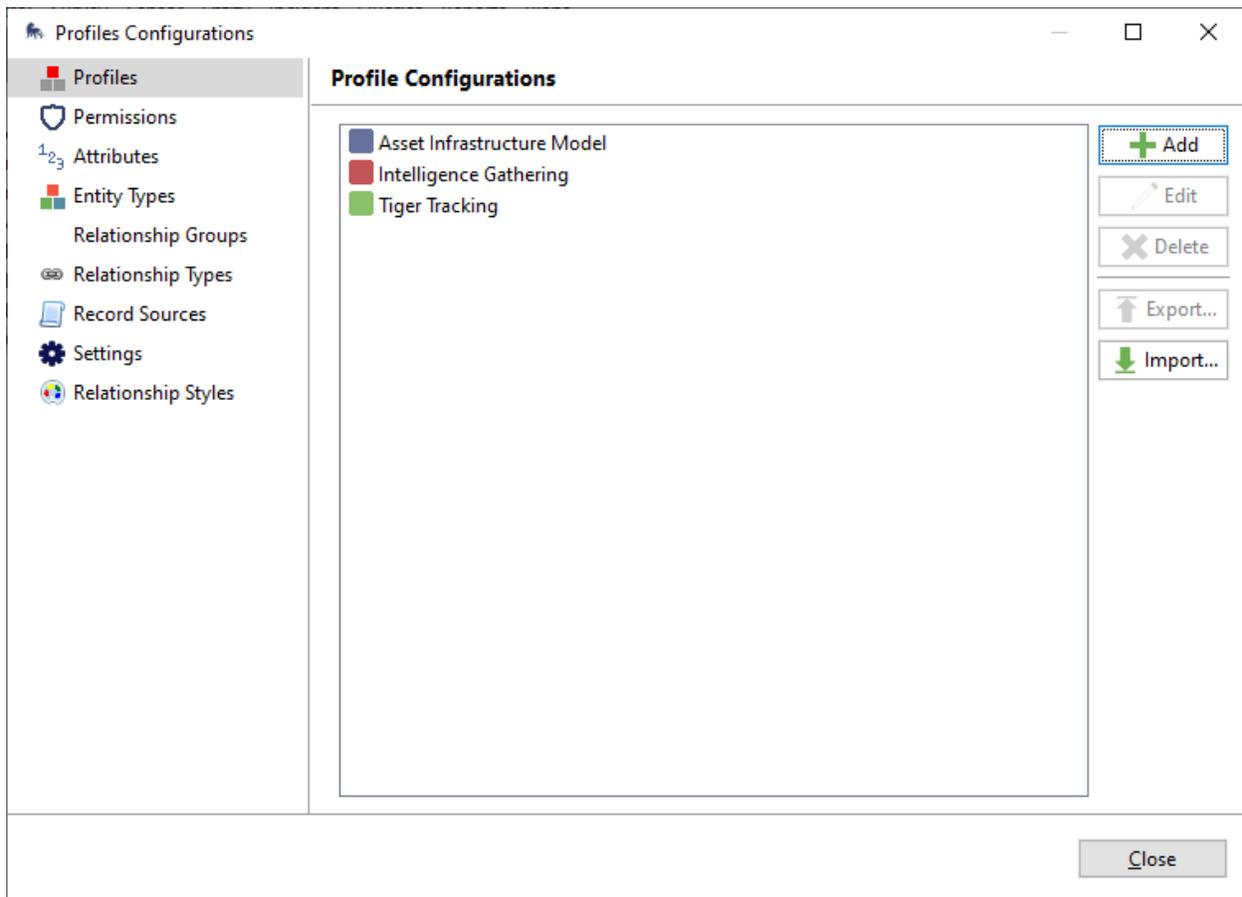
2.5 Enhanced mobile data collection

SMART Mobile is SMART's global leading mobile data collection. Through a tight integration with SMART desktop and Connect, SMART Mobile is used to easily, accurately, and quickly record observations based on a configured version of your SMART data model. GPS waypoint and tracklog and observation data are collected simultaneously and uploaded to SMART in a semi-automated process.

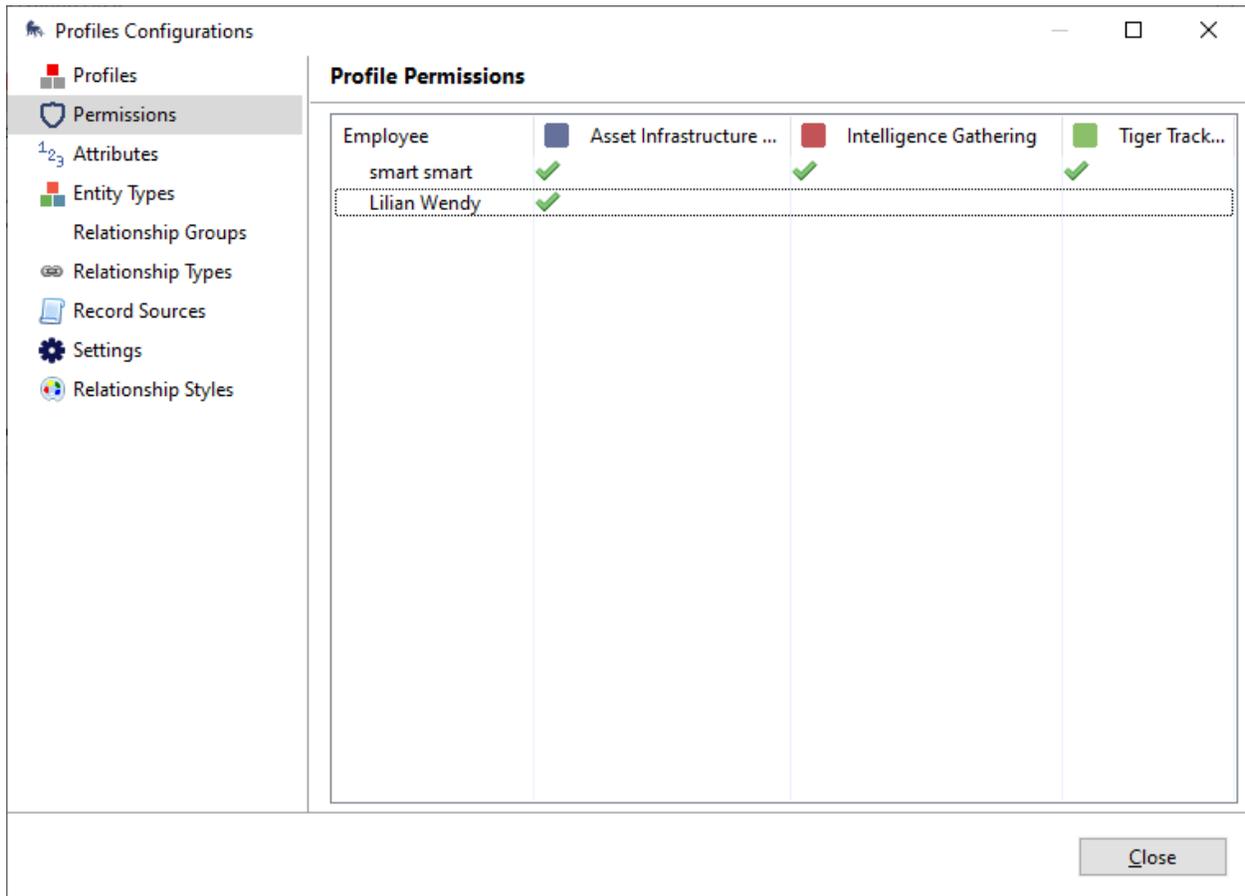
SMART Mobile was launched in 2020 as part of SMART 6.3 for Android devices. In SMART 7, SMART Mobile will now be available for iOS when using with Connect.

2.6 Multiple profiles

With SMART 7's new Multi-Profiles feature, users can have all the features of Profiles (custom entity, attribute creation, tracking and reporting) for a number of different categories in the same Conservation Area (CA). For example you can see here we have setup 3 different profiles for Asset Tracking, Tiger Tracking and Intelligence Gathering that could be taking place in the same CA:



Permissions can be assigned per-profile so if one some of your categories contain sensitive data and are only accessible to a small subset of your CA employees, you can assign the correct permissions to enforce that in SMART 7:



You can also create Relationship types that cross-over your various profiles, for example I have created a relationship if you wanted to track particular individuals who are linked to a particular tiger being poached:

2.7 Additional improvements

SMART 7 has over 40 new functionalities to support SMART users globally. These functionalities improve the overall user experience and work flow and include:

- Ability to make waypoint attachments - Attachments of any file type can now be added to each waypoint.
- Distance and direction - allows users to enter in a distance offset and compass bearing to accommodate for sightings away from where the patrol is taking place
- Custom polygons: Draw polygons to filter information on the map
- New information tool icon - The map windows for the patrol and query perspective contain an extra icon that is not available in the map perspective mapping window, the information tool. You can use this tool to obtain observation details about a particular waypoint.
- Improved reporting functionality: Add group bys (Armed, Patrol Pilot, Agency, Rank and Part of a Plan) to Patrol Summary Queries
- Employee teams - allows for easy assignment of employees who regularly head out onto patrols together.
- Multi select attribute types - New in SMART 7 is the new attribute type of Multi-Select lists. Multi-Select lists allow the user to select more than one option from the defined list.
- Other improvements:
 - Ability to label your waypoints with text and numbers
 - Observer - when entering in data users can now tag each observation with who collected the observation.
 - Create set teams - Employee Teams allows for easy assignment of employees who regularly head out onto patrols together. Employees can be part of multiple teams or strictly assigned to a single team.
 - Ability to add user defined configurable attributes to patrols and query them

Layers **Waypoint Information** X

Waypoint ID: 11

Carcass - Wildlife

Threat: Hunting
 Species: *Loxodonta africana* (African Elephant)
 Cause of Death: Illegal
 Age of Animal Carcass: Fresh
 Age of Animal: Adult
 Sex: Male
 Action Taken Animals: Left At Scene

Trophies seized - Wildlife

Threat: Hunting
 Species: ELEPHANTIDAE
 Type of Trophy: Tusks
 Number of Trophies: 2.0



Figure 6 - screenshot of the new waypoint attachment feature

SMART PARTNERS



Established in 2011, the SMART Partnership has become the global leader in protected area management solutions, offering an integrated suite of powerful tools and services to help conservation practitioners improve management effectiveness and better protect wildlife. Current SMART Partnership members are: Frankfurt Zoological Society, Global Wildlife Conservation, North Carolina Zoo, Panthera, Peace Parks Foundation, Wildlife Conservation Society, Wildlife Protection Solutions, World Wildlife Fund, and Zoological Society of London.

