



# SMART: A Guide To Getting Started



# What is SMART?

The Spatial Monitoring and Reporting Tool (SMART) is designed to improve anti-poaching efforts and overall law enforcement effectiveness in established conservation areas and management zones. SMART enables the collection, storage, communication, and evaluation of data on: patrol efforts (e.g. time spent on patrols, areas visited and distances covered), patrol results (e.g. snares removed, arrests made), and threat levels. When effectively employed to create and sustain information flow between ranger teams, analysts, and conservation managers, the SMART Approach can help to substantially improve protection of wildlife and their habitats.



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This guide is written for site managers (e.g. protected area managers, community managers) and conservation (NGO) partners who are considering introducing SMART in a conservation area. Successful implementation of SMART requires a major commitment by the implementing agency, and careful considerations should be made before initiating this approach. The guide provides an overview of what is required to make SMART a success and describes the main steps in the preparation and introduction of the SMART Approach in a conservation area. It is built on the collective experience and lessons learned of SMART implementers and site-based protection staff. What follows is not a detailed training manual; training resources are available on the SMART website. Rather, you will find a checklist that will help:

- a) determine whether your site is suitable for SMART (not all sites are, and it is better to recognize that up front).
- b) identify key capacity, financial, and management needs for SMART implementation.
- c) help plan a realistic program for SMART implementation at your site that will best ensure long term success.

The SMART Approach can be introduced to any conservation area that relies on patrol teams to protect wildlife and the natural ecosystems upon which they depend. This approach has already demonstrated its effectiveness in improving law enforcement efforts, improving morale of enforcement teams, and reducing threats to wildlife and other natural resources across various sites throughout the world. At present SMART is being implemented in more than 120 conservation areas in 27 countries worldwide and is fast becoming a global standard for law enforcement monitoring and management. The number of SMART sites is steadily growing. For an up-to-date list of conservation areas where SMART has already been introduced, visit [smartconservationtools.org](http://smartconservationtools.org).

Using the SMART software and establishing a patrol database will not, on its own, improve protection in a conservation area. In addition to the SMART software and database, basic enforcement capacity and infrastructure must be in place. Adaptive patrol management practices must be introduced that require, among other things: additional resources; staff with management; analytic and computer skills; processing and evaluation of patrol data; feedback mechanisms between managers and rangers; and appropriate ranger performance-based incentives. This combination of monitoring law enforcement effort, results, and threats to inform and adapt management practices is what we call the SMART Approach.



# Before you start:

In any given conservation area, SMART does not require successful pre-existing management practices, but it is important that the basic building blocks for adaptive management are in place [see end of guide for a definition of adaptive patrol management]. Without this basic framework, SMART is unlikely to succeed in improving management effectiveness and may result in wasted or diverted conservation resources. The following basic requirements will help you decide if your conservation area is ready to begin introducing SMART:

**A formal management structure** must be in place in the conservation area where an adaptive management approach can operate. Without an accepted management authority to evaluate patrol results and lead decision-making, it will be difficult to effect measurable change in patrol practices. Such a management authority might include a protected area agency, a wildlife management department, or a community-based management authority. In all cases the relevant authority (Director, Deputy Director) needs to have decision-making responsibilities.

**Endorsement for the SMART Approach** from the relevant management authority. The level at which this endorsement is required will depend upon the particular governance structure. For highly centralized governance structures, endorsement may be required at national level; for decentralized governance structures, endorsement may be required only at the level of an individual protected area manager.

**Commitment to improving management systems.** Adaptive patrol management with SMART implies a commitment to improve a site's management practices. This level of commitment must come at minimum from the responsible management authority. Managers should be willing to consider a change in protection strategies, management practices, or budget allocations in order to improve enforcement. Managers must also be willing to enact these changes by demonstrating strong leadership in mobilizing an effective and motivated ranger force.

## Skills required from management include:

- 1) good leadership skills.
- 2) an understanding of patrol issues (including the main threats and how rangers can address them).
- 3) analytic skills required for evaluating patrol data and providing feedback to rangers. Staff with a strong technological proficiency are required for database design, patrol data storage, and data management. IT experts should be available on standby, either at the conservation area or remotely, to solve technical problems when they occur.

**Financial planning** to ensure adequate resources are in place to operate patrols, including patrol mission costs and ranger salaries. While many conservation areas may not have sufficient resources or staff to patrol the entire conservation area continuously, some basic level of patrolling is required at the outset. This will generate sufficient and meaningful data with which to inform management decisions and identify resource gaps once the SMART Approach is fully implemented. Adequate resources must also be allocated to secure the necessary field equipment for collecting and managing patrol data (e.g. computers, GPS units, batteries, battery chargers, power source). SMART is a spatial monitoring tool and requires at minimum a GPS or spatial data logging device.



## Ensuring SMART Quality

Experienced site protection managers may be able to introduce SMART without prior experience and external technical assistance. However, it is strongly recommended that site-based staff attend training workshops approved by SMART Partners on the use of SMART software and application of the SMART Approach for adaptive management. It is also highly recommended to involve experienced SMART experts from conservation agencies or conservation NGOs in the introduction of the SMART Approach at your site (e.g. invite them to assist in adaptive management design and ranger trainings or organize study tours to well-established SMART sites). It is also recommended to take advantage of the SMART Forum established for users to post problems and share experiences and expertise.





## SMART Partnership

The SMART Partnership was established in 2011 with the purpose of developing SMART protection monitoring software and supporting tools for improving protection management. The current SMART Partnership members are CITES-Monitoring Illegal Killing of Elephants (MIKE) program, Frankfurt Zoological Society, North Carolina Zoological Park, Panthera, Peace Parks Foundation, Wildlife Conservation Society (WCS), World Wildlife Fund (WWF), and Zoological Society of London (ZSL). For more information on how the Partnership works visit: [smartconservationtools.org/partnership](http://smartconservationtools.org/partnership).





# Preparing for SMART implementation

Once you are ready to begin implementation a number of preparatory steps for SMART introduction need to be completed at the site level. The following checklist will help you to adequately plan for SMART implementation:

- ✓ **Conduct a threats analysis and define conservation objectives and indicators** – A threats analysis should be conducted for target species and their habitat to identify actions that rangers can initiate to address these threats. This may include gathering all available information on the status of the conservation area, including wildlife distribution and habitat types, access points and human settlements, and existing protection infrastructure. Objectives for patrol efforts and interventions, including threat-reduction and recovering/maintaining habitat and target species populations, should be formulated with as much detail as possible. This process will also define key indicators against which progress will be measured and evaluated. This process should be conducted at the site level and involve managers, patrol staff, and/or biologists who are knowledgeable about the conservation area.
- ✓ **Define reporting needs** – Regular and standardized patrol reports should be developed that summarize key data and progress indicators in the form of clear, user-friendly tables and maps. A timetable for report production (e.g. weekly, monthly, quarterly, annual), content of the report, and a distribution list should be defined. These reports will form the basis for evaluating patrol efforts and results against patrolling and conservation objectives.
- ✓ **Identify any additional intelligence gathering mechanisms** that can be used to inform patrol planning and evaluation. SMART supports an intelligence-led patrolling approach. Intelligence is actionable information originating either from patrols themselves or from third-party sources that can help inform patrol deployment.

✓ **Design the data model and collection protocols** – The SMART data model will define what information should be collected by rangers (and entered in the SMART database). It will also form the basis for all analysis and reporting. Therefore, it is critical to think carefully about this at the outset—typically during a workshop led by the site manager and with senior protection staff present. Data can be collected during patrols on a wide range of topics, but it is recommended to focus on key threats and observations that can be unambiguously identified by rangers in the field (e.g. snares, poached carcass, timber stumps), actions that address threats (e.g. snares removed, guns confiscated, warnings issued), and observations of key wildlife species (e.g. tracks, droppings, vocalizations, or direct encounters). In our experience, data models typically start out far too complex and need to be considerably streamlined through trial and error in the field. It is important to keep the data model simple and collect only data that are useful for patrol management as defined by the SMART indicators above. Data collection should not take so much time that rangers cannot remain focused on their main task: patrolling. The SMART data collection protocols will define how information is recorded by rangers in the field. The protocols should be sufficiently detailed as to ensure standardization, avoid ambiguity in the field, and minimize any compromise in data quality. The data collection protocols should be clearly defined in a ranger data collection manual. Data collection can be done on paper forms with a GPS or through handheld GPS-enabled mobile devices. Paper and digital forms need to be customized according to the data model designed for your site. A default data model has been developed which is available for users and can be altered to meet your site needs.

✓ **Identify appropriate mechanisms for adaptive management and regular feedback** – Patrol reports should be discussed with all rangers (or patrol team leaders) during regular feedback meetings led by the site manager. The team leaders should be invited to comment on their patrol performance and patrol targets for the next period should be developed with the aim of improving performance.

✓ **Preparing a training plan** –

Training must be conducted for:

- a) rangers in data collection protocols, including various exercises for data collection, navigation with GPS units, and documenting patrol routes.
- b) SMART operators in setting up, operating, and managing the SMART database.
- c) analysts in interpreting results of patrol data in order to evaluate performance and in conducting trends analysis.
- d) managers who are learning how to make the most of SMART information to improve anti-poaching efforts.

✓ **Develop performance-based ranger evaluation system** – SMART patrol monitoring makes it possible to accurately measure patrol efforts and results of patrol teams and individual rangers. It is recommended to link ranger salaries, bonuses, evaluations, and promotions to patrol performance as measured — and verified by — SMART. Changes in reward and evaluation systems should be designed and discussed with the rangers before the SMART Approach is launched. If a performance-based ranger incentive scheme is implemented, resources also need to be allocated to sustain the scheme.

✓ **Configuring the SMART database** – SMART software has to be installed on a permanent computer at the site and a SMART database configured for the conservation area. The configured database includes the designed data model, GIS layers that determine the spatial boundaries of the conservation area (including conservation area limits, patrolling sectors, administrative zones), key patrol parameters (including patrol stations, staff, mandates, and transport options), and standard reports and queries that will produce the desired indicators. Database administration and data management protocols should also be put in place to ensure data security and regular backup.



- ✓ **Defining responsibilities** – The responsibilities of all staff involved in the new SMART Approach for patrol management should be defined, including who will: be responsible for data collection during patrols, check patrol data handed in by patrols (patrol debriefing), store information in a database, process data and prepare patrol reports, evaluate the patrol performance on the basis of these reports, and prepare and conduct feedback meetings with rangers. (These last points are typically, but not always, performed by the site manager). A SMART point person should be identified whose role is to oversee and ensure correct functioning of all these steps.
- ✓ **Monitoring program** – A monitoring program should be in place to evaluate performance against conservation objectives, such as increasing or maintaining populations of target conservation species or improving habitat quality. The main conservation target species populations should be monitored using standardized and scientifically rigorous methods. While rangers can be involved in such a scientific monitoring program, monitoring during patrols should focus on no more than a few target species and not detract from the primary responsibility of rangers, which is law enforcement.
- ✓ **Developing a clear timetable for implementation** – The data model and protocols for data collection, storage, management, and processing should be tested and evaluated during an initial period of at least four weeks. During this time it will become clear whether rangers understand the data collection procedures and can consistently conduct data collection. Any problems related to data collection protocols and the use of software for data storage and processing should be resolved during the test period. Following the first year of SMART implementation, a full evaluation should be conducted to assess progress in implementation of the SMART Approach.



## SMART Approach for Adaptive Patrol Management

**RANGER PATROLS** Patrol teams collect and record data on where they go and what they see while on patrol, such as threats (e.g. poaching signs), patrol results (e.g. arrest, confiscations of weapons), and wildlife observations.

**DEBRIEFING** Patrols report their patrol activities and patrol data and routes are checked.

**DATA ENTRY** Patrol data are stored in a SMART patrol database.

**DATA ANALYSIS AND REPORTS** Data are processed into highly visual tables, charts, and maps showing patrol effort, coverage, and results, forming the basis for patrol analysis and evaluation.

**FEEDBACK AND PATROL PLANNING** Regular meetings with rangers are held to discuss patrol effort and results and set new patrol targets.



# Evaluating the SMART Approach

When SMART patrol monitoring and the adaptive patrol management cycle are operating, regular patrol reports (usually monthly or quarterly) will be produced to evaluate patrol performance and provide feedback to rangers. Less frequent (e.g. annually) and more in-depth data analyses, with an evaluation of various trends in patrol performance and threat-levels, as well as an evaluation of the entire patrol management system, are required. Useful questions to ask during these in-depth analyses and evaluations include:

- ❓ Is the law enforcement presence being maintained at the site, and are patrols occurring throughout the reporting period, or at least on a systematic or regular basis? Is the manager responsive to information coming from patrol teams and are directives from management based at least partly on this information?
- ❓ Are patrol targets and the conservation objectives being met? What are the trends in threat levels?
- ❓ Which kind of patrols are most effective in reducing threats and meeting targets? Compare the effectiveness of different patrol mandates, transport types, and whether patrols were intelligence-led, in order to determine their impact on detecting illegal activities and patrol results (e.g. arrests).
- ❓ Is intelligence effective and leading to improved enforcement outcomes?
- ❓ Are patrols sufficiently focusing on areas with the highest threat-levels and/or highest densities of conservation target species? Are patrol routes predictable?

❓ Are any changes required in the SMART patrol monitoring and adaptive management practices? Related questions include:

- ❓ Are all patrol data used for patrol management, or is it possible to review and streamline the data model?
- ❓ Should patrol team composition, leadership, patrol priorities, position of patrol stations, or patrol methods be changed?
- ❓ Are the patrol data collection, storage, processing, evaluation, reporting, and ranger feedback procedures satisfactory? Should the content or frequency of patrol reports and feedback meetings be changed?
- ❓ Are changes in the ranger salaries, bonuses, or evaluation procedures required to increase ranger morale and patrol performance?
- ❓ Is the manager responsive to information on threats coming from field patrol teams and is the manager correctly interpreting risk factors based on this information?

