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## Key Concepts:

■ Monitoring is critical to effective wildlife conservation because it helps us assess whether or not our conservation interventions are working.

■ Monitoring allows us to test if conceptual models and assumptions about why and where conservation efforts are needed are correct.

■ Ideally, we should monitor at three different levels: the results of our conservation interventions, the reduction of threats, and progress in achieving our stated objectives.

■ Monitoring that does not lead to an assessment of management effectiveness, and an improvement in management practices has little conservation value.

■ Serious tradeoffs exist when allocating limited resources between threats-reduction efforts and monitoring the effectiveness of such efforts.

## MONITORING CONSERVATION PROJECT EFFECTIVENESS

### Why do we need to Monitor?

Monitoring conservation outcomes is universally recognized as a vital, yet challenging task. Monitoring is a core component of the Living Landscapes Program because it helps us:

- 1) determine whether or not a project is meeting its objectives and having a positive conservation effect;
- 2) identify which actions lead to the success or failure of a particular conservation strategy;
- 3) evaluate and revise our conceptual model of why and where conservation efforts are needed; and
- 4) ensure that all participants in the project from international NGOs to government staff and local residents learn from the experience and can improve their implementation of future conservation programs.

Without monitoring, we run the risk of pouring considerable resources into ineffective activities that do not succeed in conserving wildlife and wildlands.

### Monitoring is not Surveillance

It is important to distinguish between surveys, surveillance, and monitoring. A survey is a one-time event that can be used to provide baseline or current status information, such as chimpanzee density in a given area, the average household consumption of fish in a village, or the spatial distribution and pattern of palm forest within a reserve. Surveillance is essentially a series of repeated surveys to measure things that change over time, such as hunter captures, rainfall, crop production, elephant locations, or the number of bottles of cola in the pantry. Monitoring is repeated, like surveillance, but with an important difference - using baseline quantitative or qualitative information as a benchmark, it is designed to assess progress towards a specific desired state or condition. For example, counting the frequency of dynamite fishing within a marine reserve over time is surveillance, comparing changes in frequency relative to an 80% reduction target set by the project constitutes monitoring.

*The Living Landscapes Program is a Wildlife Conservation Society initiative that identifies, tests, and implements wildlife-based strategies for the conservation of large, wild ecosystems integrated within wider landscapes of human influence.*



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## How can Monitoring be Useful and Economical?

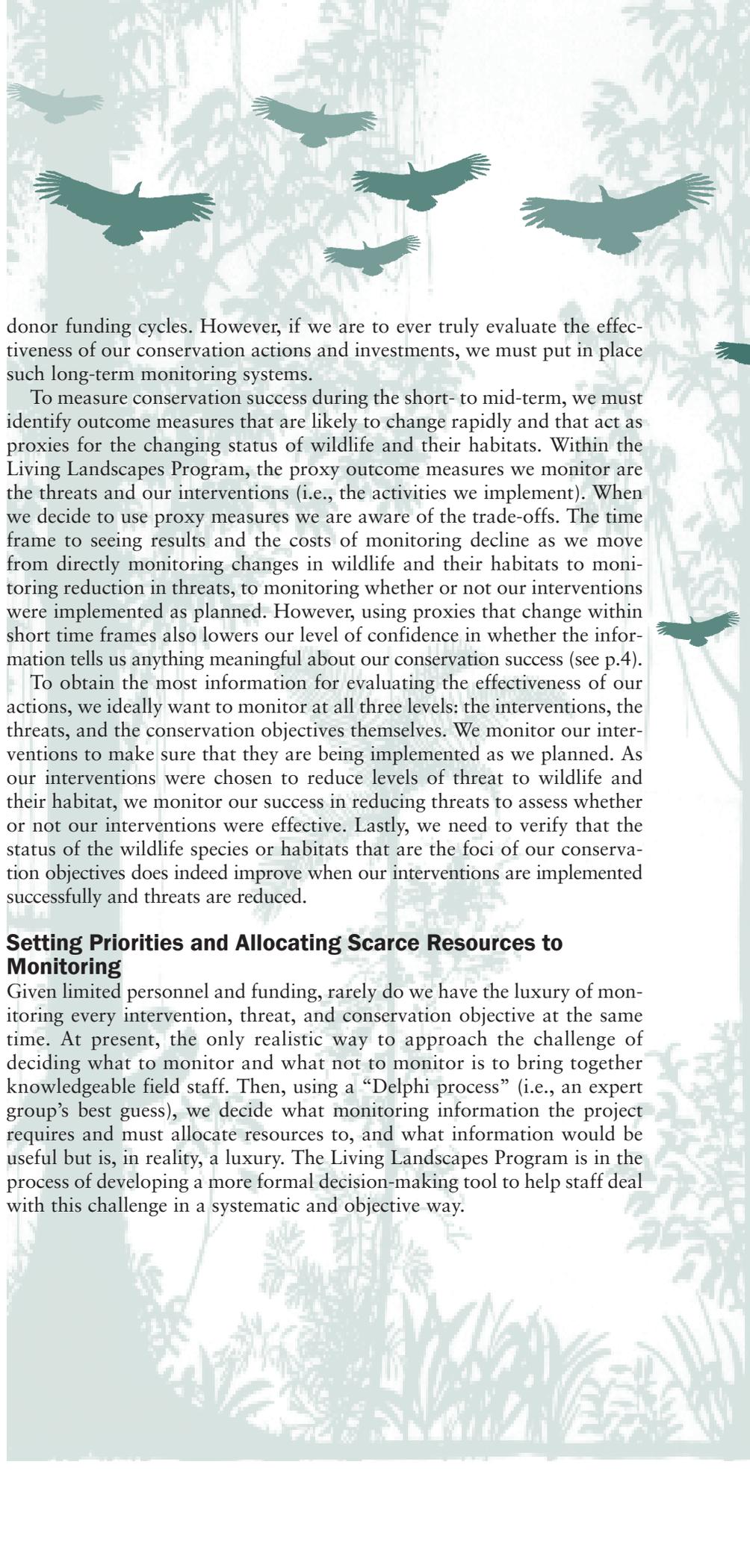
Monitoring is useful if it leads to better management decisions and improved management actions. Managers must have a clear and explicit understanding of how the monitoring information they are planning to obtain is going to help them make wildlife management decisions and influence their conservation actions. In other words, we need to have thought about what our management response will be if monitoring shows, for example, that the total weight of fish landings at the local port approaches or recedes from, our conservation objective over time.

## Developing a Monitoring Plan

WCS conservation projects are typically designed and implemented to reduce the pressure of human land and resource uses on wildlife and their habitats. Our conservation monitoring is therefore designed to measure and evaluate over time the consequences of human actions on biological systems and the success or failure of efforts to reduce these impacts. Using the project's conceptual model as a guide for identifying what key information would be needed to track project progress is a good place to start when developing a monitoring plan.

## Monitoring at all Levels

To have the greatest confidence that our conservation investments are effective, we must track changes in the extent and quality of wildlife habitat and the density, population size, and functions of wildlife. That said, field experience tells us that the scale of the threat and the number of exogenous factors outside our control (i.e., floods, disease, drought) may affect the "natural" variation in wildlife populations and habitat quality. This will determine the intensity and duration of monitoring required to detect trends in the changing status of wildlife populations, and their habitats, that we are sure result from human land- and resource - uses. Frequently, we may need to continue monitoring for 10–20 years before we can detect such trends. Although improved status of wildlife populations and their habitats are the ultimate outcomes that we strive for in our conservation projects, assessing progress requires a long-term commitment that extends far past typical

The background of the right side of the page features a light green, semi-transparent image of a forest with several birds in flight. The birds are silhouetted against the lighter background, creating a sense of movement and natural habitat. The forest appears to be a dense, tropical or subtropical environment with various types of trees and foliage.

donor funding cycles. However, if we are to ever truly evaluate the effectiveness of our conservation actions and investments, we must put in place such long-term monitoring systems.

To measure conservation success during the short- to mid-term, we must identify outcome measures that are likely to change rapidly and that act as proxies for the changing status of wildlife and their habitats. Within the Living Landscapes Program, the proxy outcome measures we monitor are the threats and our interventions (i.e., the activities we implement). When we decide to use proxy measures we are aware of the trade-offs. The time frame to seeing results and the costs of monitoring decline as we move from directly monitoring changes in wildlife and their habitats to monitoring reduction in threats, to monitoring whether or not our interventions were implemented as planned. However, using proxies that change within short time frames also lowers our level of confidence in whether the information tells us anything meaningful about our conservation success (see p.4).

To obtain the most information for evaluating the effectiveness of our actions, we ideally want to monitor at all three levels: the interventions, the threats, and the conservation objectives themselves. We monitor our interventions to make sure that they are being implemented as we planned. As our interventions were chosen to reduce levels of threat to wildlife and their habitat, we monitor our success in reducing threats to assess whether or not our interventions were effective. Lastly, we need to verify that the status of the wildlife species or habitats that are the foci of our conservation objectives does indeed improve when our interventions are implemented successfully and threats are reduced.

## Setting Priorities and Allocating Scarce Resources to Monitoring

Given limited personnel and funding, rarely do we have the luxury of monitoring every intervention, threat, and conservation objective at the same time. At present, the only realistic way to approach the challenge of deciding what to monitor and what not to monitor is to bring together knowledgeable field staff. Then, using a "Delphi process" (i.e., an expert group's best guess), we decide what monitoring information the project requires and must allocate resources to, and what information would be useful but is, in reality, a luxury. The Living Landscapes Program is in the process of developing a more formal decision-making tool to help staff deal with this challenge in a systematic and objective way.

## Components of a Monitoring Framework

Once we have decided what we need to monitor, the next step is to develop a monitoring framework that explicitly defines the targets against which our conservation progress will be measured, the trend data that we will use to measure our progress over time, the information gathering activities that we need to put in place to obtain the monitoring information, and the indicators we are going to use to quantify change over time. In the Living Landscapes Program, whether we are monitoring interventions, threats, or conservation objectives, the components of our monitoring framework remain the same: targets, trend data, monitoring activities, and indicators.

### Targets

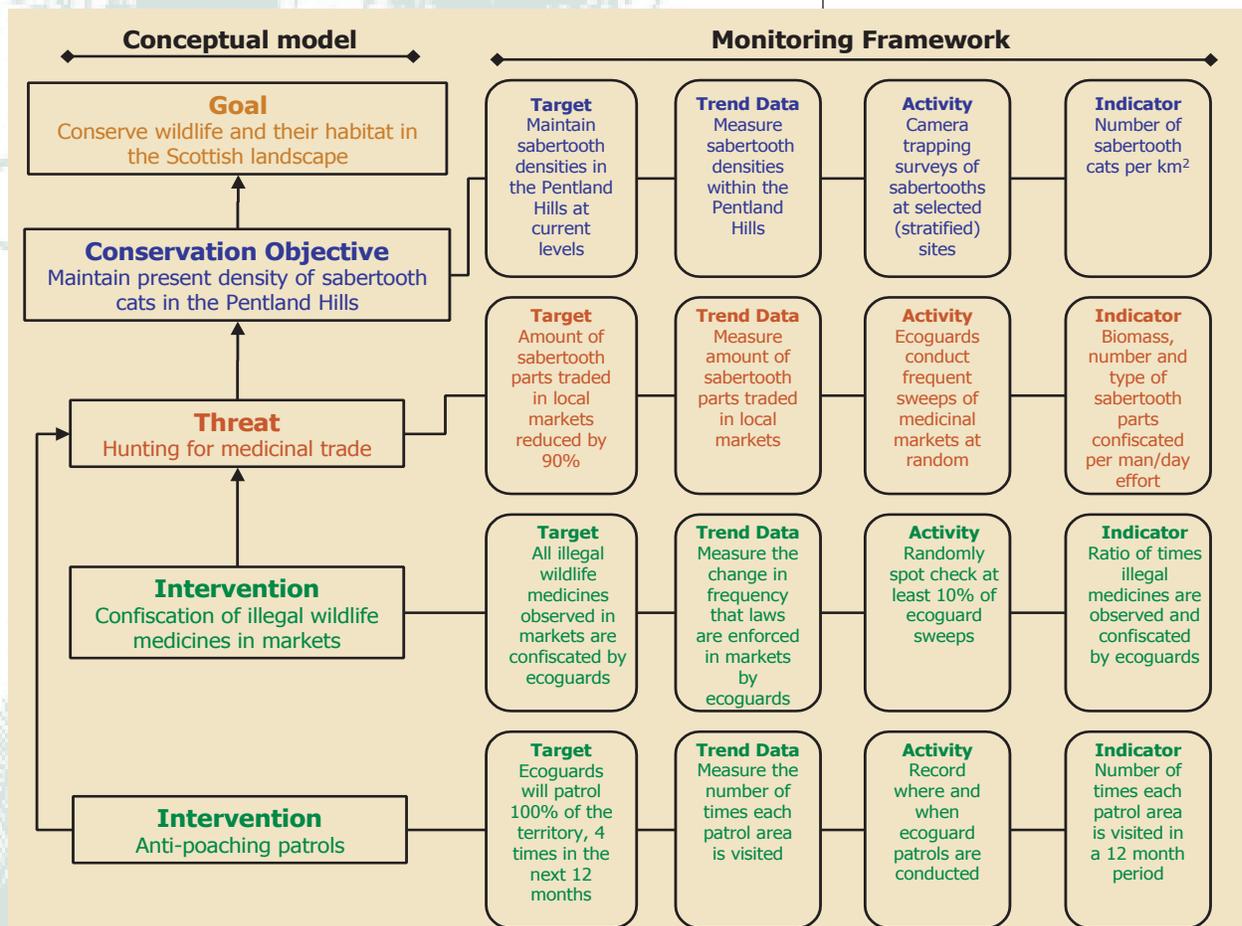
Targets are specific statements detailing the desired accomplishment or outcomes of a conservation program. According to Richard Margoluis and Nick Salafsky in 'Measures of Success: Designing, Managing, and Monitoring Conservation and Development Projects' (Island Press, 1998) a target should be:

- 1) impact oriented – represent desired changes in a threat;
- 2) measurable – definable in relation to some baseline and along some standard scale;
- 3) time limited – achievable within a specific period of time;
- 4) specific – clearly defined and understood by all involved in the project; and
- 5) practical – feasible given available cash, time, and skills.

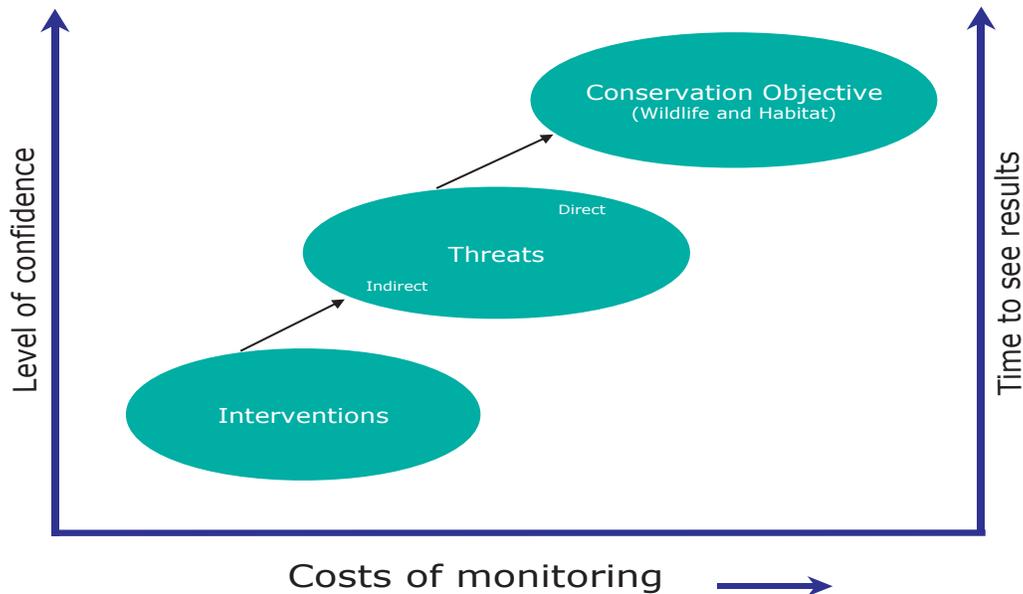
For example, if the illegal trapping of macaws were a threat, then the target might be to reduce illegal trapping of macaws by 50% within five years. In this case, a target for achieving the conservation objective might be a specified density of macaws in a named national wildlife reserve.



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A monitoring framework with explicitly defined targets, trend data, monitoring activities and indicators for a simple conceptual model with one goal, one conservation objective, one threat and two interventions.



Tradeoffs in costs, time and level of confidence when monitoring project interventions, threats to wildlife and habitats, and the project conservation objective.

**Trend data**

Trend data are used to make the comparisons needed to determine whether the change we are seeing is or is not related to our actions. Comparisons can be within the project over time (i.e., change in snare encounters over time as anti-poaching efforts are implemented) or between the project site and a non-project location (i.e., difference in snare encounters between the project site with anti-snare hunting efforts and the control site where no anti-poaching efforts are in place). The descriptions of trend data needed often start with the phrases, “Measure the change...” or “Measure the difference...”.

**Monitoring Activities**

Monitoring activities describe the information gathering process that will be conducted to collect the required trend data used to make the defined comparisons. Activities can be patrols, roadblocks, training sessions, radiotelemetry, household surveys, informant interviews, etc. When developing these activities, it is always useful to write down how it will be carried out, who will be responsible for implementation, when and where the activity will take place, and what resources are needed for the activity to take place.

**Indicators**

Indicators are the actual measurement units that we use to quantify the impact of our conservation efforts. Examples of indicators might include the number of snares found per person/day of patrolling or the number of protected animal species found at roadblocks per person/day. Wildlife Conservation Society, in collaboration with Conservation International and Foundations of Success, is developing a decision tree and indicator dictionary to help practitioners pick the suite of indicators that would provide the most cost-effective assessment of project performance.

**Upcoming Bulletins:**

Setting Priorities: Threats Reduction or Monitoring Effectiveness?

Managing Wildlife Use  
NGO/Private Sector Partnerships

Community-based Wildlife  
Conservation

Threats Analysis and Coalition  
Building - Rationale and Practice

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