

# Monitoring Forest Restoration Projects in the Context of an Adaptive Management Cycle

Sheila O'Connor, Nick Salafsky, and Daniel W. Salzer

## Key Points to Retain

Monitoring is a process of periodically collecting and using data to inform management decisions.

Monitoring is best done not as a separate activity at the end of a project, but as an integral part of an adaptive management cycle.

A complete monitoring plan outlines information needs, specifies the least number of indicators to meet these needs, the methods for collecting the indicator data and who is responsible, and when the data are collected.

The amount of resources spent on monitoring should vary inversely to the degree of certainty that project activities will be effective.

There are tools and guidance available for doing monitoring in the context of adaptive management, but not enough has been done specifically for long-term multiparty forest restoration projects.

## 1. Background and Explanation of the Issue

Monitoring is the process of periodically collecting and using data to inform management decisions. Monitoring is important for projects of all sizes and for all areas of conservation, including forest restoration, to demonstrate

impact and to help improve project effectiveness. Monitoring becomes particularly vital when projects become complex and include many different types of goals and a variety of stakeholders, as is often the case with forest restoration projects.<sup>185</sup>

Although there are many different approaches for monitoring conservation projects, over the last decade there has been an increasing convergence on doing monitoring in the context of an adaptive management approach.<sup>186</sup> The key to this approach is that monitoring cannot be tacked on at the end of a project.<sup>187</sup> Instead, it must be integrated into the overall project cycle<sup>188</sup> (Fig. 20.1).

The first step in any type of restoration project is to carefully define the site and issues, and to identify what elements of biodiversity and other values that you want to focus on. This should be followed by a thorough situation analysis that establishes the causal chains that link your restoration targets (features) to the threats (pressures) and root causes that affect these targets. The third step is to identify where along these causal chains you think you can intervene with your actions (responses) and to develop specific objectives for how you need to change the system to improve the chances of success. Once you have done this basic work, it should now be readily apparent as to what key

<sup>185</sup> Ecological Restoration Institute and USDA-CFRP, 2004.

<sup>186</sup> Stem et al, 2005.

<sup>187</sup> Ralph and Poole, 2002.

<sup>188</sup> CMP, 2004; Salafsky and Margoluis, 1998; TNC, 2000.

## WWF Programme Management Cycle

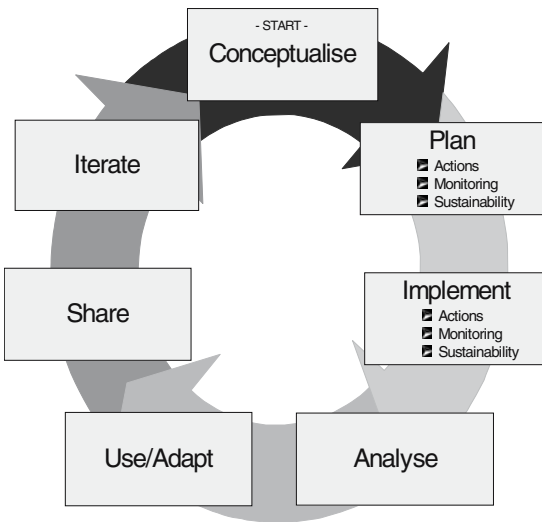


FIGURE 20.1. A project/programme management cycle adapted for WWF use. (Adapted from the Conservation Measures Partnership (CMP), 2004.)

indicators you need to track in order to determine how the targets are doing and whether your restoration actions are having their intended results. A complete monitoring plan clearly outlines your information needs, specifies the *least* number of indicators needed to meet these needs, details methods for collecting the indicator data, and describes who has this responsibility and when these data are collected. In addition, the monitoring plan identifies what analysis is undertaken by whom, and to whom information is circulated and when.<sup>189</sup>

The amount of project resources that you invest in monitoring should generally vary depending on the situation you are facing.<sup>190</sup> If you are in the rare situation where you are highly confident that forest conditions will restore themselves passively, then you would likely spend only a limited amount of resources on monitoring the situation and making sure that no new threats emerge. If the restoration effort warrants the use of straightforward

restoration techniques that have a proven record of success, then you would likely invest most of your resources in taking action and only limited amounts on monitoring the results. And if there are restoration needs, but you are unsure how to effectively address them, you may have to experiment with different actions and spend relatively more resources to monitor and analyse the results. In general, the percentage of project resources spent on monitoring should vary inversely with your degree of certainty that your activities will be effective.

## 2. Examples

We present a case study showing how monitoring and adaptive management were used to improve forest restoration efforts and a fictitious case study illustrating some of the traps that monitoring efforts commonly fall into.

### 2.1. Case 1: Using Monitoring to Improve the Effectiveness of Restoration Actions in an Adaptive Management Cycle<sup>191</sup>

**Problem:** Deciding which strategies and activities to undertake in a major restoration effort of Longleaf Pine Ecosystems in the southeastern U.S., and how to monitor the effectiveness of these actions so that effective adaptive management can take place.

**Solution:** The goal of the project was to identify which management techniques most effectively reduced hardwood density and moved the ecosystem toward predetermined values found in natural high-quality sand hills. The project established a reference condition (or a set of targets related to the biodiversity values—these included composition, structure, and function). They also determined a set of metrics that would possibly be useful as indicators of both management success (effective actions) and the state of the sand hill ecosystem. To help determine the strategic management actions, a conceptual model was developed that looked at both the degradation

<sup>189</sup> Earl et al, 2001; Hartanto et al, 2002; Margoluis and Salafsky, 1998.

<sup>190</sup> Earl et al, 2001; Hartanto et al, 2002; Margoluis and Salafsky, 1998.

<sup>191</sup> Provencher et al, 2001.