

Simple monitoring methods

Monitoring is required as part of good forest management. The main reason for monitoring is to **improve management**. Your monitoring should help you with at least the following:

- **Identifying change:** monitoring helps you learn whether there are any changes e.g. in the plant and animal populations, or in the services the forest provides.
- **Understanding impacts:** monitoring helps you to discover what effects the forest management has on the important areas of forest, on the services that the forest provides (like climate regulation and preventing erosion), and on the lives of people and communities.

This information can then be incorporated into forest management plans and help you make better decisions about forest operations.

What needs to be monitored?

Even in small forests, monitoring of the following aspects is essential:

- **Productivity, yield and dynamics of the forest**
 - growth rates of the species being harvested
 - the production (yield)
 - regeneration of the species you are harvesting
- **Conservation measures**
 - monitoring of special protection afforded to rare species or other areas considered to be of 'High Conservation Value'
- **Environmental and social impacts of the way the forest is being use and managed.**

1) Monitoring Productivity, yield and dynamics of the forest

Monitoring needs to show that in practice, the forest is growing and regenerating and that your harvesting levels are sustainable (that you are not harvesting more than the forest can re-grow). If you are harvesting something other than timber on a commercial scale (e.g. extracting resin, collecting bark, seed, leaves etc) you'll also need to be sure that this extraction is sustainable: that you are not removing more of the product than the forest can reproduce.

In large forests monitoring of forest growth and yield is usually done through the annual measurement of trees in permanent sample plots (PSPs). These provide information about how fast the different tree species are growing, the rates of tree mortality, and how the forest responds to extraction. But for small, low intensity and community operations this is often not feasible.

At its simplest, monitoring means "checking to see what is happening". Even in very small forests, or in those where you are harvesting little over a large area, some form of 'checking what is happening' is needed.

Relevant parts of the FSC Principles and Criteria

Principle 8: Monitoring and Assessment

FSC states that monitoring is to be conducted, appropriate to the scale and intensity of forest management, and done consistently to ensure that the results are useful. The monitoring should assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts (summarized from FSC P&C).

Principle 7: Management Plan

The need for monitoring is specifically emphasised in relation to measuring growth and yield, and incorporating this information into the management plan.

Principle 9: High Conservation Value Forests

Monitoring forms an important part of managing any High Conservation Value Forests

Principle 10: Plantations

Plantation management requires that both on-site and off-site social and environmental impacts should be taken into account

Definitions

To monitor is to observe a situation for any changes which may occur over time

Monitoring is the regular collection of information in order to understand a situation and the impacts of activities over time



Tips for Monitoring

Keep it simple! Don't collect information that you don't need, or don't know how to use.

Keep it relevant! Make sure you collect information that will allow you to make meaningful decisions.

Discuss the results! Don't just collect them and file them away—present monitoring to the decision makers, whether they are forest owners, community leaders, or professional foresters. Discuss what they mean.

Use the results! Use the discussion about the monitoring results to make changes to or improve the way the forest is managed. If you don't do this you have wasted a lot of time (and money) collecting them for nothing!

Use the existing organizational or management structures in your operation. Whether that is a community or a private business, monitoring is much more likely to work if you make it part of existing responsibilities, reporting and decision-making mechanisms.

Find organizations that can carry out studies that will help your monitoring. This will help save you costs, and get accurate scientific data. Try universities, local NGOs or technical colleges.



If it seems expensive or complicated for your situation to establish your own sampling plots, consider some of these options:

- *Collaborate with your neighbours in the region.* If they have a similar forest type you could share the costs of some simple sample plots.
- *Get help from local research institutions.* Ask if they have done any research on forest growth in your region (or if they'd like to use your forest as a research site).
- *Set up some simple tests of your own.* Make them appropriate to the scale of your operation: e.g. choosing a few locations to measure regeneration after felling (at each location mark out a square on the ground and count how many seedlings of one or two tree species regenerate, in a particular area. Do this every year at the same time and place). Use these tests to understand your forest better, and learn what you need to change to improve how the forest regenerates. While more scientifically accurate data might be ideal, if these experiments are appropriate to the scale of your operation, and you are actually using their results, then they are good monitoring tools!
- *Trust your eye and your experience.* Often you can see what changes are happening to the forest. Sometimes you don't need plots and surveys to see that some species are regenerating better than others. Act on this!

2) Monitoring Conservation Measures and Results

Every operation - even a very small one - should have a simple management plan. If it's a small forest or one managed with very low harvesting levels, this can be a very simple plan. In some cases this may even be a verbal description - if for example the managers are not able to use written documents.

The management plan should include how you are going to protect the biodiversity of the forest, and protect any High Conservation Values (HCVs) that are found there. You should monitor whether your actions are **in practice** helping to protect or conserve the biodiversity and HCVs that were identified. In other words check that your planned actions are having the intended conservation effect *e.g. has the quality of the water changed?; have numbers of endangered animals increased or decreased? etc.*

This monitoring doesn't have to be complicated and time consuming. Here are some ideas that may be appropriate:

- Instead of monitoring the presence of particular animals, monitor the presence of the habitat (e.g. vegetation, food sources, breeding areas) that the animal needs to survive.
- Or use signs of the animal's presence (e.g. nests, feeding sites, prints, or waste products), rather than sightings of the animal itself.
- Try fixed point photographs to show the changing condition of a habitat feature e.g. a wetland, lake, or canopy cover.
- Use simple equipment (you don't need expensive equipment) e.g. water volumes in streams or lakes can be measured with a graduated stick.

For community managed forests: try discussing how to measure the conservation aspects of the forest during a community meeting— or even better while walking through the forest. Even if for most members of your community the concept of 'monitoring' or 'indicators' is not very familiar— many community members will have good ideas about how to find ways of measuring the health of the forest, that are simple, low cost, and fit in with their regular routines. Use these ideas

For more guidance on conservation monitoring see briefing note 4 'Biodiversity and High Conservation Values'

3) Monitoring Environmental and Social Impacts

FSC requirements include monitoring of the environmental and social impact of the forest use. This means understanding any potential negative impacts from any activity associated with the forest management - such as road building, harvesting, collecting forest products, use of chemicals, letting animals use the forest. There are guidance sheets on this topic (briefing notes 2 and 3). The assessment should identify some key concerns - which are the things that need to be monitored. It is vital that actual impacts are monitored to check that they are within acceptable limits.

For community forestry operations, groups of families harvesting forest products, and groups of small individual woodlots where group members are part of the same community, it is advisable to hold regular meetings to discuss the impacts of the forest use and management. At such meetings the results of any monitoring activities should be presented and discussed. Examples include: monitoring the quality of drinking water; monitoring any changes in availability of fruits, seed or animals normally collected in the forest, and monitoring the impact of hunting (illegal and legal). These meetings should be used to develop or modify community-level decisions about norms for access and use of the forest. This is a simple form of actively incorporating the results of monitoring into management actions.

Monitoring does not need to involve complex science or technology: you can use simple counting, photographs, or the regular observations of people who use the forest over several years. What's important is that it gives you information that is useful and meaningful to you – and that you use it!

Good Monitoring in Practice

A simple monitoring plan should help you. It should record:

What you are going to monitor, and **why**.

How you are going to do it.

Who will do the monitoring, and **how often**.

With whom the results will be discussed, and **how the results will be used**

Example of A Simple Monitoring Plan

Actions to be taken	What to monitor	How it will be monitored Who will be responsible <u>When</u> they do this	How the responsible people will report on what they find What will be done with the results
<i>Protect HCV forest structure (suitable habitat for HCV birds) by low impact logging</i>	<i>Check that low impact logging is actually taking place, according to the management plan.</i>	<i>The forest manager will inspect the harvest area at the end of each week of harvest to ensure that low impact logging has been used, and that damage to surrounding vegetation is minimal.</i>	<i>If low impact logging is not being practiced, the loggers will be warned that they are in breach of contract and asked to implement the practices. The forest manager will report on his findings and any action in the end of year reporting meeting. If necessary changes will be made to the management plan, and re-training may be offered.</i>
<i>Ensure key HCV bird species are not negatively affected by low impact logging</i>	<i>Check that the populations of these animals are being maintained or increased by the management measures taken.</i>	<i>The forest manager will set up an annual monitoring programme of 4 key species with the ecology department of the local university, for students to measure the population of these birds and animals in the forest over a 4 year period.</i>	<i>The forest manager will report to the forest owner annually with a summary of the results. They will be used to decide if the low-impact logging is helping to maintain species populations.</i>

Basic Monitoring Principles

Think of your objectives. Why are you collecting this information? How will you use the results? Don't collect it if you don't know the answer! You should choose to monitor a few things that will tell you about any changes you're concerned about. For example:

Productivity of the forest: a small forest owner may be concerned about whether a palm is regenerating after commercial harvesting of palm leaves. Their objective would be check how it is regenerating, and they will use the results to modify the way the palm is harvested (how many leaves per plant, or what time of year).

Social and environmental impacts: a community forestry operation is concerned about whether the water supply of the local village has been affected by expanded timber extraction activities. The objective of their monitoring would be to check whether there has been any change in water supply, and they will discuss the results with the community leaders and village leaders, and - if necessary - make changes to the way they extract timber.

Decide what you can measure. Whatever you are trying to monitor you will need to break this down into measurable values (indicators). For example you can't measure the 'biodiversity value' of the forest, but you can measure the presence of certain habitats, types of vegetation, the number of nests of an animal or bird, the number of times a certain animal is heard or seen. To indicate the forest's environmental service value you might use forest structure or canopy cover.

Try to find simple indicators for each aspect you are looking at.

Consider scale. Remember that some things may change in small areas but over the forest as a whole remain consistent – so don't just monitor in one small area.

Collect information regularly. To demonstrate change or no change you need to have information collected over a period of time: monitoring isn't about measuring something once, just before the auditors arrive!

Pick the right frequency. This could mean every day (e.g. stream flow), every year (e.g. forest structure) or even every five years, but it must be consistent. If you measure something every year, it should be at the same *time of year*.

Think long-term. Plan to measure over the long-term because short-term fluctuations may not be indicative of long-term changes e.g. forest-dwelling species may move away from an area during logging but come back 2-3 years later. There may be major changes year to year in the abundance of fruits, mushrooms, but over the long-term they may be roughly the same.

Focus on Detecting Change. Monitoring needs to detect change: when you can see that something is changing you are able to evaluate if this is good or bad, and take action if necessary. Monitoring is also often used to demonstrate *no change*. This may be important to demonstrate that your use of the forest is not having a negative effect on something. For example, you might have several pairs of a rare bird that regularly nest in your forest area. If the number of birds starts to decline, you need to be able to notice this and investigate why. But if the number remains the same each year, you need to show this as well. It provides the evidence that your management is not having a negative effect on that species.

Use the results! The proof of whether your monitoring process is any good, is whether the results have actually been used when taking decisions about forest management, making rules about forest use, or revising the management plan. If you don't use it, there's no point collecting it!

Further information

For monitoring biodiversity and High Conservation Value Forests see: Meeting FSC Certification Requirements for the Management and Monitoring of Biodiversity and High Conservation Value Forests: A Step by Step Guide for small and low intensity managed forests (FSC /ProForest, 2008)



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Common monitoring mistakes

- Collecting information without knowing how it's going to be analysed and used.
- Collecting too much information.
- Getting 'experts' to collect information, and monitor the condition of the forest, but not using their results, or not receiving the results in a way that allows the forest managers to use them.

Avoid these by making a simple monitoring plan, and discussing the results at regular meetings.