

# RESOURCE STEWARDSHIP MONITORING PILOT TESTS

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Prepared by  
Forest Practices Branch, BC Ministry of Forests and Range



## INTRODUCTION

During the fall of 2004, resource stewardship monitoring protocols were pilot tested for three resource values – riparian-fish, stand-level biodiversity and soils. The key objectives of the pilot testing were to:

1. test the proposed model for resource stewardship monitoring;
2. test the ease of data collection and analysis at the district, regional and provincial levels;
3. test whether the monitoring protocols met district and regional stewardship monitoring needs, and were successful in identifying resource value status, trends and implementation issues;
4. promote the continuous improvement of indicators and monitoring protocols to ensure they adequately assess whether resource value objectives are being achieved.

The results of the pilot testing were presented and discussed at a two-day workshop held in Victoria on February 22–23, 2005. The following is a summary of the workshop proceedings.

### **The FREP Mission:**

*To ensure British Columbia is a world leader in sustainable forest management by providing the high quality, science-based information we need for decision-making and continuous improvement of our forest practices, policies and legislation.*

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# PILOT TESTS

## Riparian-fish

Six forest districts were trained in the riparian-fish monitoring protocol. Five districts participated in pilot testing the protocol – Campbell River, Chilcotin, Chilliwack, Kalum and Rocky Mountain. The routine-level checklist contained 14 indicators to assess the physical and biological condition of the stream and adjacent riparian area. The indicators were scored with YES or NO answers (YES = OK; NO = problems).

A roll-up scoring system based on the number of NO answers was used to determine the overall site condition (i.e., 0–2 NOs = functioning; 3–4 NOs = functioning at risk; 5–6 NOs = functioning at high risk; >6 NOs = non-functioning).

A total of 47 sites were surveyed across the five districts. All six classes of streams were surveyed, with a slight skew towards smaller streams.

Overall, the riparian-fish checklist was relatively easy to use and came up with consistent answers. Training for the riparian-fish checklist was rated as very good.

Some recommended improvements to the riparian-fish checklist include: clarification of the wording of some questions, assessing the suitability of the checklist for non-fish bearing streams, addressing the downstream effects of impacts in riparian management areas, and developing a separate checklist for wetlands and lakes.

## Soils

Training for the soils monitoring protocol was conducted in five forest districts. However, due to a late start in the field season, only the Chilcotin (1 site) and Rocky Mountain (5 sites) districts were able to pilot test the five major indicators in the soils monitoring protocol.

The Prince George Forest District carried out office assessments for nine sites using high resolution aerial photographs. The potential for using aerial photographs to identify features (e.g., access structures, drainage diversions, soil disturbance), estimate distances, and plan walkthrough routes and transect lines is very promising. High resolution photography is capable of providing accurate and reliable information for planning and implementing field assessments, evaluating certain indicators, and reporting and interpreting results.

Satellite images, such as Landsat, SPOT-5 and QuickBird, can also be used for conducting resource stewardship monitoring. QuickBird has the highest resolution and is

able to distinguish roads, streams, bridges, coarse woody debris, and even individual tree crowns. Satellite imagery cannot compete with the quicker turnaround times for aerial photography and can be quite costly; however, it can also be a valuable tool for high priority areas.

As a result of the late start in the field season, the pilot testing for soils was not completed and will need to continue in the 2005 field season. Nevertheless, a number of ways of improving the soils monitoring protocol were identified, including: simplifying the checklist, providing

more detailed soil assessment training, using aerial photographs to facilitate office preparation and reduce field time, and coordinating the green tree retention and coarse woody debris soils indicators with the stand-level biodiversity checklist.

*Indicators and monitoring protocols for riparian-fish, soils and stand-level biodiversity can be viewed at: [http://www.for.gov.bc.ca/hfp/frep/3\\_indicators.html](http://www.for.gov.bc.ca/hfp/frep/3_indicators.html).*

## Stand-level Biodiversity

Seven forest districts were trained in the stand-level biodiversity monitoring protocol. Six districts pilot tested the protocol – Chilliwack, Kalum, Campbell River, North Coast, Chilcotin and Rocky Mountain. A total of 39 cutblocks were sampled using the seven indicators in the checklist.

The stand-level biodiversity indicators were combined to come up with a risk rating for each cutblock. Risk factors were based on thresholds assigned to each indicator based on comparisons with baseline data (e.g., total stems per hectare live versus dead trees, CWD total volume).

The field cards for stand-level biodiversity were found to be straightforward and the plots were relatively easy to establish due primarily to effective pre-pilot training. Suggested improvements to the checklist include: adding an indicator for alien species, incorporating stand-level monitoring results into a landscape context, refining the risk factor rating system, and increasing the baseline database for more accurate interpretation of results.

## Refinements Common to All Three Monitoring Protocols

There were a number of proposed refinements that were common to all three monitoring protocols:

- Provide refresher training prior to conducting resource stewardship monitoring.
- Develop a field guide or handbook on the monitoring protocols for each resource value.
- Consider the use of high resolution aerial photography or satellite imagery to improve office planning and reduce field work.

- Ensure quality assurance during the collection and interpretation of field data.
- Investigate the use of hand-held data collection devices to improve efficiencies.

## Training

Training for the pilot projects occurred during the fall of 2004 prior to going out in the field. The amount of training provided for riparian-fish and stand-level biodiversity appeared to be adequate; however, the soils training could have focused more on general soil assessment techniques to assist district staff in working with the checklist.

Recommendations for improvements to training include: ensure the training is delivered early in the field season and close to the timing of the field work, have enough trainers in the field to assist all trainees, have the trainers review the work of the trainees as a quality assurance measure, develop field guides for the checklists and incorporate them into the training, and provide half-day refresher training for subsequent pilots and/or monitoring activities.

To reduce costs and improve efficiencies, it was recommended that training be somewhat regionalized. Trainers could be trained in a number of resource values at regional boot camps (one for the Coast and one for the Interior). The trainers would then instruct district staff in groups of 2–3 districts at a representative central location. This proposal is currently under review.

## Quality Assurance

It was originally intended for the trainers of each monitoring protocol to follow-up the pilot work conducted by the districts as a quality assurance measure. Unfortunately, due to the late start in the field season, this did not occur. It was recognized that quality assurance will be critical to the success of future resource stewardship monitoring pilots. Draft quality assurance protocols are currently being developed and will be available for the 2005 field season.

## Data Management

Another important component of the pilot testing was to provide input into the development of an effective data management/reporting system for the large amount of data that will be collected through resource stewardship monitoring. While full implementation of resource stewardship monitoring will take years to fully ramp up, eventually there could be upwards of 300 district staff using a data management system under the program.

Issues, such as data collection requirements, data storage and management, analysis tools, and reporting of results, must all be considered in order to develop an efficient and effective resource stewardship monitoring program. These issues will be addressed through consultations with forest regions and districts to ensure the development of a data management process that meets the needs of identified data requirements and facilitates the continuous improvement of forest practices in British Columbia.

## Site Selection

The selection of sample sites for resource stewardship monitoring depends on the objectives of the end user. From a statistical perspective, random selection is best, particularly when establishing provincial, regional or district trends. However, random selection may not be appropriate for all types of monitoring. For example, if a district wishes to focus on high-risk areas, a targeted or stratified site selection approach may be warranted. In addition, it is important to determine how many sites need to be examined in order to be able to reach a statistically valid conclusion. These and other challenges related to site selection will be discussed with regional and district representatives to develop an overall site selection model for resource stewardship monitoring.

## FIELD SEASON 2005

Pilot testing of the soils monitoring protocol will continue in the 2005 field season. Other resource value checklists that may be field tested this field season include water quality, visual quality and karst (resource feature).

The riparian-fish and stand-level biodiversity monitoring protocols will be ready to implement this field season with some minor revisions and refinements. Implementation of the stand-level biodiversity protocol will be limited to ecosystems with adequate baseline datasets.

## MORE INFORMATION

For additional information on the resource stewardship monitoring pilot project or FREP in general, please refer to our website at <http://www.for.gov.bc.ca/hfp/frep>.

*The FREP Report Summary is a regular publication of the **Forest and Range Evaluation Program** designed to inform stakeholders on program development and implementation, and report on the results of evaluation projects.*