Riparian Management Effectiveness Evaluation Pilot for the British Columbia Forest and Range Practices Act

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An effectiveness evaluation program is a fundamental component of the BC Forests and Range Practices Act. Its objectives are to determine whether forestry standards and practices governed by regulation are achieving the desired result of protecting a variety of environmental values including fish. To evaluate the effectiveness of riparian management standards in protecting fish habitat, an interagency technical team identified and developed a set of 14 routine-level indicators and associated sampling and monitoring protocols. Routine-level indicators are relatively simple ones that use visual estimates or measurements, often to generate categorical data for answering yes/no questions organized into checklists. These indicators covered physical and biological conditions and functions in both streams and their adjacent riparian areas. The indicators are: channel bed disturbance, channel bank disturbance, large woody debris (LWD) processes (logjams), channel morphology, aquatic connectivity, fish cover diversity, moss abundance and condition, fine sediments, aquatic invertebrate diversity, windthrow frequency, riparian soil disturbance, LWD supply, shade and microclimate, and disturbance-increaser plants.

Each indicator is posed in the form of a question which is answered either "yes", "no", or "not applicable". Before the answer can be given, a series of subquestions must be answered. The number of "yes" versus "no" answers to the subquestions determines the answer to the main question. The role-up score of "yes" versus "no" answers across the 14 main questions results in a surveyed site designated in one of four possible outcomes: (1) proper functioning (0-2 no's), functioning at risk (2-4 no's), functioning at high risk (5-6 no's), or non-functioning (> 6 no's). Observations in managed sites are compared with reference or control sites as part of the assessment.

The routine indicators and methods needed to be clear, simple, and practical so that non-specialist government staff could use them confidently. Therefore, five replicate field calibrations were performed to test for consistency of results among survey teams varying in levels of expertise from research scientists to forest technicians who received a short training course prior to testing. The test results showed good precision among teams. The indicators and methods were further refined and made available to trained Ministry of Forests district staff to use in a five-district pilot survey in 2004.

A small sample of 47 streams were eventually covered in the pilot. However, only 19 of 47 streams were assessed as proper functioning. Nine of the 47 streams were deemed non-functioning, 11 functioning at high risk, and 8 functioning at risk. Most problems were associated with small, non-fish-bearing headwater streams where 13 of 22 were either non-functioning or functioning at high risk. Fine sediments, aquatic invertebrate diversity, aquatic connectivity, LWD supply, and soil disturbance were the indicators which failed most frequently. However, the primary cause of site-level problems was roads and crossings rather than riparian harvesting standards and practices. Nevertheless, other important impact sources were (1) excess logging debris, and (2) low tree retention around small streams where riparian reserves are currently not mandatory.

The performance of both the methods and trained survey teams was encouraging. Therefore, the pilot study is being expanded to an 18-district operational survey in 2005.

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