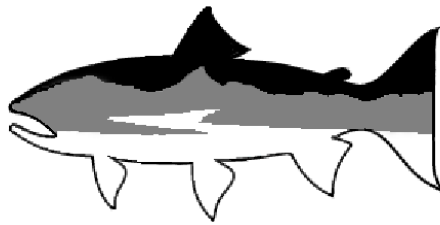


Interagency Regional Monitoring

Northwest Forest Plan

Aquatic and Riparian Effectiveness-Monitoring Program



2001 Pilot Summary Report

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Summary

A pilot project was conducted during the 2001 field season to continue to refine field protocols, test whether intensive subsampling could adequately characterize a watershed, and establish a data quality assurance program. Protocols for conducting upslope and riparian vegetation and roads analyses were also developed. Finally, a decision support model was constructed to evaluate the condition of individual sample reaches and watersheds.

To determine whether subsampling would characterize a watershed, we compared intensive survey data with extensive full-census survey data. For channel morphological indicators such as bankfull width: depth and entrenchment ratio, the difference between the intensive and extensive surveys was not significantly different from zero. However, pool frequency was overestimated in the intensive surveys.

For the intensive surveys, an independent crew resampled two randomly selected sites in each watershed in an effort to estimate the variance associated with the field surveys. Channel morphological characteristics were very close in the two survey efforts, wood and pool frequency were more variable, and substrate estimates (D_{50} and percent fines) were the most variable of the indicators. However the difference between the two surveys was not significantly different from zero for any of the indicators.

Vegetation composition for riparian and upslope areas were determined using data layers developed by the Interagency Vegetation Mapping Project for Oregon and Washington and CalVeg in California. Both of these layers were constructed based on Landsat Thematic Mapper data. Vegetation was divided into the following classes: non-forest, pure conifer, pure hardwood, and mixed forest. Conifers in pure and mixed forest were further classified by seral stage.

Reach and watershed-level evaluations were conducted using the Ecosystem Management Decision Support software (EMDS). Although reach condition tended to be

slightly positive (on a scale of -1.000 to 1.000), other watershed-level features such as riparian road density and seven-day average maximum temperature negatively influenced the watershed condition scores. Consequently, scores for the 16 watersheds visited in 2001 all reflect poor watershed condition.

We encountered several difficulties in the field sampling, notably the loss of watersheds from the sampling effort because they were dry or physically too large to sample. Also we encountered very few non-constrained or response reaches, which will make in-channel trend detection in the watersheds extremely difficult.

Introduction

Background

The Northwest Forest Plan (NFP) was approved in 1994. The plan includes an Aquatic Conservation Strategy (ACS) that requires the protection, rehabilitation, and monitoring of aquatic ecosystems under the Plan's jurisdiction (USDA-USDI 1994). The Aquatic and Riparian Effectiveness Monitoring Plan (AREMP or the monitoring plan) was developed to fulfill these monitoring requirements. The final monitoring plan was approved March 2000. Specifically, the monitoring plan was designed to assess the condition of aquatic, riparian, and upslope ecosystems; develop ecosystem management decision-support models to refine indicator interpretation; develop predictive models to improve the use of monitoring data; provide information for adaptive management by analyzing trends in watershed condition and identifying elements that result in lowering watershed condition; and provide a framework for adaptive monitoring at the regional scale (Reeves et al. 2001). Monitoring is conducted at the subwatershed scale (USGS 6th-field hydrologic unit code). These subwatersheds (hereafter referred to as "watersheds") are approximately 10,000-40,000 acres in size.

Collection of field data began summer 2000 in four watersheds. The goal of the 2000 sampling was to test sampling protocols and determine the funding level and crew structure needed to implement the monitoring plan (Moyer et al. 2001). A pilot project was conducted in 2001 in 16 watersheds to continue the refinement of the protocols and answer other questions related to implementing the monitoring plan (see Monitoring Objectives/Questions section below). Here we present the results from the 2001 pilot, highlighting the progress made by the monitoring plan thus far.

Pilot Program Monitoring Objectives

A pilot project for the monitoring plan was conducted during the 2001 field season. Sixteen watersheds spread throughout the NFP area were included in the pilot project. The objectives of the pilot program included:

- Comparing data generated by intensive subsampling efforts with data generated by extensive full-census sampling efforts.
- Developing a data quality assurance/quality control program.
- Developing a data analysis protocol for upslope and riparian vegetation and roads.
- Constructing a decision support model and defining evaluation criteria parameters for assessment of watershed condition.

A complete discussion of each of these objectives is provided in subsequent sections. Included is a brief introduction, methods, results, and the next step needed to complete the project. The Conclusions section describes the next step(s) in the evolution of the module, including a discussion of problems encountered during the 2001 pilot, the budget and personnel required to accomplish the tasks assigned to the module, and the effort underway to coordinate the efforts of the monitoring plan with other monitoring programs conducted by state and federal agencies in the NFP area.

Field Efforts

Watersheds must contain a minimum of 25 % federal ownership (USDA Forest Service, USDI Bureau of Land Management [BLM], or USDI National Park Service) along the total length of the stream (1:100,000 National Hydrography Dataset [NHD] stream layer) to be included in the monitoring plan. Of the watersheds that meet the ownership criteria, sixteen were randomly selected for inclusion in the pilot program (Table 1, Figure 1). Selection of the

