WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

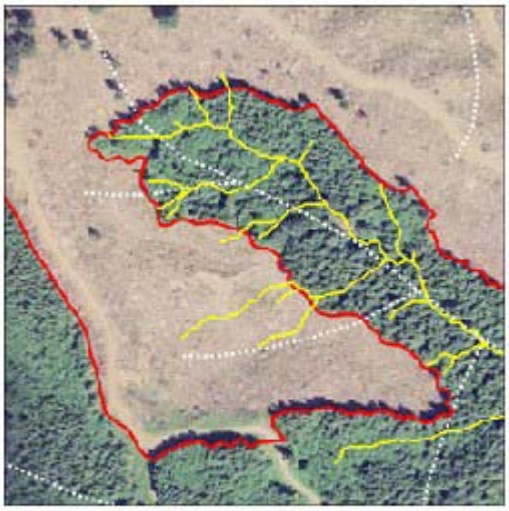
State Trust Lands Habitat Conservation Plan

RETROSPECTIVE ANALYSIS OF THE INTERIM HEADWATERS STREAM CONSERVATION STRATEGY

This retrospective analysis of the interim headwaters stream conservation strategy is an opportunity to quantitatively support adaptive management of headwater streams on 1,140,000 acres (461,000 hectares) of state-managed forests in western Washington.
Operationally, each administrative region has independently interpreted the implementation of the interim headwater conservation strategy. However, we have not documented how existing conservation strategies like riparian and wetland management zones, protection of unstable slopes, and wildlife leave trees offer protection to headwater systems

Research and Adaptive Management on Headwater Streams

The retrospective analysis is one of three efforts undertaken by the Habitat Conservation Plan research group to support the development of a long-term headwater conservation strategy. The other efforts are (1) a literature review of headwater stream ecology and protection, as well as a forested wetland management literature review and synthesis; and (2) the Riparian Ecosystem Management Study (REMS), a large-scale, multi-disciplinary, manipulative study of the effects of alternative headwater buffer configurations on headwater stream habitat and their exports to downstream fish-bearing systems.



A ground verified model of headwater stream locations (solid yellow lines) and currently mapped streams (dashed white lines).

Project Goals

The main goal of the retrospective analysis is to support adaptive management related to our headwaters conservation and management under existing conservation strategy elements. We aim to

- quantify the extent of the headwater stream system,
- document how the interim headwaters conservation strategy has influenced management around these systems,
- increase our ability to model the headwater stream system, and
- document leave tree areas and notable ground and channel conditions.

This data will help determine if any additional requirements are necessary as part of the long-term headwaters conservation strategy.
The intended outcomes of this project are:

- to identify the extent to which existing policies meet the headwater stream conservation objectives; and
- to provide context to evaluate alternatives that will be considered for the long-term headwaters conservation strategy.

Methods

Initiated in 2004, this study used GIS analysis linked with existing department databases to determine the population of forest stands that were clear cut harvested following Habitat Conservation Plan guidelines. That population was stratified using EPA ecozone classification, and we selected sites with both LIDAR coverage and post-harvest aerial photography. A random stratified sample of 52 sites encompassing approximately 2,400 harvested acres (970 hectares) was examined.

The locations of headwater streams at each site were modeled from the LIDAR data. Field crews verified the location of the modeled streams and mapped various hydrologically significant points using a GPS unit operating ArcPad, a mobile GIS platform. Field data were then used to determine the extent of the headwater system and to quantify the extent of any riparian buffering.

Connection to Future Effectiveness Monitoring

Our results will link the range of headwater protection practices that take place on state lands to the experimental conditions and results of the manipulative study. In the future, the REMS study will serve as the effectiveness monitoring method for the long-term headwaters conservation strategy.

Data from this study has illustrated a broad range of buffer placement along type 5 streams under the guidance of the interim headwater conservation strategy.

More Information

Washington State Department of Natural Resources. 1992. Forest Land Management Plan. Author, Olympia, WA.

Washington State Department of Natural Resources. 1997. Final Habitat Conservation Plan. Author, Olympia, WA.