Riparian Function Literature Synthesis

Description

In Washington lands subject to the riparian policy and management guidelines covered by the FFRHCP and laid out in the 1999 Forests and Fish report are strongly influenced by the science of riparian processes articulated in the 1993 Forest Ecosystem Management Assessment Team (FEMAT) report, "Forest Ecosystem management: an ecological, economic, and social assessment". Although the Forests and Fish Report basis and the rules derived from it included additional sources through that time, our scientific understanding of riparian processes has evolved since then. Some aspects of the then-current state of knowledge on riparian processes and the influences of timber harvest on them have been affirmed by more recent science, but for other parts the scientific conclusions are changing. This literature review and synthesis will look at literature that has been completed since the FEMAT and Forests and Fish reports will inform us regarding timber harvest impacts to riparian functions. The following types of information addressing timber harvest effects on riparian functions will be included:

- Electronic databases
- Peer-reviewed publications
- Other published material – conference proceedings, white papers, newsletters, blogs
- Geotechnical reports
- Unpublished data

The literature review will include literature pertinent to, and relevant citations related to timber harvest impacts on the five forest practices functions of the riparian zone; sediment filtration, shade, LWD recruitment, leaf and litterfall, and bank stability. A synthesis of the literature will also be produced that summarizes the overall findings and provides initial recommendations regarding the effectiveness of the current forest practices rules in protecting the functions of the riparian zone and may include recommendations for future research. The Systematic Literature review will address specific questions (listed below) and identify appropriate variables and associated metrics that can be used to quantify and assess timber harvest effects on the above mentioned riparian zone functions.

Focal Questions for Literature Synthesis

1) What are the effects of harvest intensity and extent within the riparian area on the five riparian functions (sediment filtration, shade, LWD recruitment, leaf and litterfall, and bank stability) in comparison to conditions before harvest?
    a. Unthinned buffers of various widths
    b. Buffers thinned to various intensities
    c. Skips and clearcut gaps

2) How do specific site conditions (e.g., topography, weather) influence the response to riparian treatment for the five functions of riparian zones (sediment filtration, shade, LWD recruitment, leaf and litterfall, and bank stability)?
3) What is the magnitude of post-harvest weather effects (e.g., windthrow events) on the long-term recovery of the five functions?
4) How do the recovery rates of the functions change over time? Are there feedback mechanisms related to, for instance, microclimate changes due to treatments in the riparian buffer that affect the recovery rates of riparian functions?
5) What are the potential cumulative effects (spatial and temporal) of timber harvest on the five riparian functions?
6) What data gaps and uncertainties exist relative to timber harvest effects on the five forest practices functions?