

Update on the Siskiyou Streamside Protections Review

The Siskiyou Streamside Protections Review assesses the effectiveness of streamside protections on small and medium fish-bearing streams in the Siskiyou geographic region. The protections assessed are focused on stream temperature, shade, and desired future conditions (DFC) of riparian (or streamside) vegetation. The Board of Forestry (Board) directed the department make this assessment with a literature review in March 2018.

This document describes progress on the literature review, titled “Siskiyou Streamside Protections Review— Stream Temperature, Shade, and Desired Future Condition: A Systematic Review”. The document also outlines the final steps for the Board’s decision based on the analysis. The expected outcome of this review will be a decision by the Board on the sufficiency of Forest Practices Act (FPA) riparian rules, to decide if:

- The FPA or rules are working as designed
- FPA or rules may not meet stated objectives
- Additional study is warranted
- No action is needed.

Systematic Review

The department prefers to use systematic reviews (SR) for doing policy-related literature reviews (e.g., Czarnomski *et al.*, 2013) because it provides for rigor and transparency concerning: how studies are searched for, which ones are included in the review, and how they are analyzed. All steps of the review process are documented for transparency. This documentation enables input from stakeholders and tribes at various stages in the review (discussed below under “Next Steps”).

The first step in conducting an SR is the development of a protocol that provides a road map for the review of scientific literature relevant to a focused question. Staff developed this SR protocol following guidance on conducting SRs in the natural resource sciences (CEE, 2018). The protocol for the Siskiyou SR identifies key questions linked to policy goals within FPA rules, and describes the criteria for literature search and inclusion. It also lays out the framework for synthesizing the information extracted from the studies included in the SR. Elements incorporated in a systematic review are outlined in Table 1.

The review seeks to answer the following policy questions:

Stream Temperature:

For small and medium fish-bearing streams in the Siskiyou region, what is the effectiveness of Oregon FPA buffers to meet DEQ water quality standards for temperature¹?

¹ “DEQ water quality temperature standards” refer to [OAR 340-041-0028 \(4\) & \(11\)](#).

Desired Future Condition:

For small and medium fish-bearing streams in the Siskiyou region, what is the effectiveness of Oregon FPA buffers in achieving the desired future conditions of streamside forests?

Table 1. Elements described in a protocol for conducting a systematic review.

Elements	Brief explanation
<u>Question(s), Objective(s)</u>	Focused, scientifically answerable question and objective that guides search strategy and inclusion criteria, and analysis
<u>Search strategy</u>	Methods (e.g., search terms and databases) to find studies pertinent to question
<u>Inclusion criteria</u>	Filters used to determine inclusion of studies to answer the question
<u>Study quality and relevance assessment</u>	Criteria used to determine strength of study methodology, and the relevance of study findings to the review question
<u>Data extraction</u>	Tables used for consistently recording data from studies and reviewers' associated notes
<u>Data synthesis</u>	Methods (quantitative, qualitative) used for synthesizing data with respect to the review question

Input on Systematic Review Protocol for Siskiyou

Outreach

On the initiation of the Siskiyou Streamside Protections Review, the Private Forests Division Monitoring Unit reached out to stakeholders, tribes, the Committee for Family Forestlands, and all three Regional Forest Practices Committees. This outreach, designed to educate and involve interested parties, included in-person, in the field, and over the phone meetings with conservation, industry, state and federal agencies, and southern Oregon ODF field staff. For two days, staff visited a variety of streams in the Siskiyou region. We will continue to visit field sites.

For the next step, Unit staff emailed the SR protocol to interested parties (90+). After receiving the first round of input on the protocol, it was discovered that our list of tribal contacts was out of date. A second request for input was sent to an updated list of tribal contacts including both cultural resource and natural resource representatives from each of the nine Oregon tribes. In addition, an OSU Extension agent for southern Oregon assisted us by sending the draft protocol to their e-mail list of local landowners. A list of questions was provided to help promote participation and to provide guidance on the type of feedback we were soliciting on the protocol.

Input on SR protocol

About 20 sets of comments on the SR protocol were received. Some responses were a paragraph or two in an email, some edited the document, some used the comment table that was provided at the end of the document, and some answered the guiding questions we provided. Major comment themes from interested parties, along with the associated responses from staff are provided below.

Theme: Total Maximum Daily Loads (TMDLs) should be directly incorporated into the SR.

ODF Response: ODF staff are incorporating the TMDL process and its findings into this rule review process by giving the Department of Environmental Quality (DEQ) a scheduled Board agenda item on this topic. ODF staff will ensure that TMDL findings are part of the record for the Board's decision making planned for April 2019.

Theme: The geographic scope of studies included in the SR should be different than what ODF is using.

ODF Response: Multiple comments indicated that the SR should be expanded to a larger geographic scope. However, the Board made a policy decision in November 2015 to not extend the SSBT rule change and the associated monitoring and research available in the rest of western Oregon to the Siskiyou. ODF staff are aligning with this decision unless directed otherwise.

A few stakeholders did not want studies from a small portion of Northern California. However, we find that region has similar-enough geology, climate, and forests to include those studies. This notion is supported by classifications in the Environmental Protection Agency (EPA) Ecoregions (EPA Level III Ecoregion 78, US EPA, 2013; Griffith et al., 2016; Pater et al., 1998).

Theme: Since DFC is, a priori, focused on the future, climate change needs to be taken into account when assessing effectiveness of FPA rules in achieving DFC.

ODF Response: This reasoning makes sense. However, there is no Board policy on climate change, and it is not currently part of the FPA. We therefore have no goal with which to assess effectiveness of the FPA in regards to climate change. Climate change has been identified as an emerging issue for the Board to review under the "Role of Forests in Carbon Policy and Adaptation Strategies for Climate Change" workplan item. The outcome of this discussion may inform future FPA effectiveness reviews. Climate change may be included as an effects modifier if it is part of studies that are included in the SR.

Theme: Disturbances e.g., fire and flooding needs to be incorporated into the analysis.

ODF Response: ODF staff proposed and crafted this analysis to focus on the effectiveness of FPA General Vegetation Retention Prescription rules (OAR 629-642-0100) but did not clearly specify that scope. This has been added to the language of the SR Protocol. Management of riparian areas after disturbance such as fire or insects and disease is covered under the

Alternative Vegetation Retention Prescription rules (OAR 629-642-0600) but is considered out of scope at this time. The Board may choose to change the scope of this analysis at any point as they see fit.

Theme: Functional outputs, especially large wood in streams, should be part of the SR since they are essential to healthy functioning of streams.

ODF Response: We agree that large wood is very important for streams. Large wood was one of the topics considered by the Board in March 2018 when they directed ODF to conduct the Siskiyou Streamside Protections Review. However, they excluded large wood in their direction to ODF so that ODF would have staff resources to work on other projects simultaneously. We may revisit the topic of large wood in the Siskiyou at a later date.

Theme: Fish use should be a central focus of the SR.

ODF Response: The Board directed ODF to work with partner agencies to bring contextual information to the Board on the status and trend of fish in the Siskiyou region. They did not direct ODF to revisit the assumption that meeting FPA goals for water quality and the riparian desired future condition would result in outcomes beneficial to fish, so this theme is considered out of scope. Fish status and trend information will be presented directly to the Board by Oregon Department of Fish and Wildlife and will be part of the record for their decision making process.

Theme: Effects modifiers (i.e., factors that can confound study results) should be addressed in a rigorous manner.

ODF Response: Effects modifiers will be documented for each study chosen for inclusion. Discussion of studies will refer back to their respective effects modifiers within the review, although a rigorous analysis of these modifiers is beyond the scope of this SR.

Theme: Restrict scope to studies with Oregon FPA buffers; rewrite questions to address objectives.

ODF Response: Due to anticipated gaps in knowledge and limited availability of studies, ODF seeks to use examples of riparian forest management outside of Oregon FPA buffers in order to describe the range of potential DFC trajectories. By bracketing with examples of riparian stands from a broad sample of buffer prescriptions, ODF hopes to articulate the range of theoretical conditions of riparian stands within Oregon FPA buffers. This includes example buffers that retain either more or less basal area than FPA buffers in the Siskiyou region.

The policy questions and objectives have been re-worded in the SR to more directly link with the purpose of the review to test the effectiveness of FPA rules (see policy questions, pp. 1-2 above).

Theme: Inclusion of unmanaged stands will skew assessment of DFC.

ODF Response: Due to anticipated gaps in knowledge and limited available studies on the range of mature streamside stands in the Siskiyou, ODF seeks to use examples of unmanaged riparian stands of mature age range. By considering effects modifiers and study quality as outlined in the draft protocol, ODF can identify and appropriately consider examples of unmanaged stands with confounding current or historical conditions.

Theme: How will you address “...on average over time across the landscape...” from the FPA goal statement for DFC?

ODF Response: Studies that meet the SR criteria will be plotted by each metric over age of stand to determine estimated trajectories for these metrics. Additional information on the foundational assumptions of the riparian protection standards were added to clarify the concept of on average over time (Lorenzen et al., 1994). We assume that the distribution of times since harvest for RMAs within a region are approximately evenly distributed, which allows us to address the rule language “...over time...”.

Regarding another interpretation of “...across the landscape...,” for the purpose of testing rule effectiveness, we will only consider the portion of forests within RMAs as specified in rule. Thus, our understanding of “...across the landscape...” considers all the RMAs within a region. ODF may be limited in capturing average conditions across the Siskiyou region (one interpretation of the phrasing “...across the landscape...”) because the review is limited to where others have already conducted studies.

Theme: In the objectives, what do you mean by “similar” when comparing managed streamside stands with mature streamside stands?

ODF Response: The protocol has been modified to include a list of criteria that will be used to evaluate whether a study includes stands similar to those of mature stands. Using these criteria, included studies will be identified as being based on stands that qualify as “mature,” “pre-DFC” or “post-DFC”. We will also distinguish which information represents managed versus unmanaged conditions. *Departmental staff cannot dictate a priori how we will assess the similarity of riparian stands managed under the FPA with mature riparian stands. The challenge is there are too many unknowns: there is a wide suite of potential metrics to assess, and it is hard to know whether or not there will be sufficient information to do quantitative analyses rather than descriptive ones. However, staff will conduct this analysis using our best professional judgment, and all stakeholders will have a chance to comment on it.*

Theme: Disagreement on ODF using an adaptive approach to modifying the protocol of the systematic review.

ODF Response: The following language has been added to the SR protocol to specify what ODF meant by adaptive approach:

Methods for nearly all studies in natural resources are adjusted between the study plan and their implementation, while remaining consistent with the study's objectives. As such, to improve meeting the review objectives ODF may modify the protocol as we learn from the included studies. However, ODF will not change the purpose, scope, or questions of the protocol unless directed by the Board. Finally, all modifications will be documented for transparency and rigor.

Theme: Do not include grey literature. Restrict the search to peer-reviewed articles.

ODF Response: Many universities, watershed councils, and agencies, including ODF, collect and report on data without peer-reviewed publishing. To exclude these reports or theses would be ignoring potentially useful information from a region with relatively few published studies. The quality and relevance assessment in the draft protocol will be used to score each piece of literature, thereby qualifying influence it may have on our conclusions.

Next Steps

The Monitoring Unit will continue with the Siskiyou Streamside Protection Review as outlined in the timeline (Table 2). Searching for and determining inclusion of literature in the SR is the next step of this Review. A spreadsheet detailing which inclusion criteria each study met, and thus which studies are included or excluded from the review, will be sent to all interested parties for their input. This will conclude Phase 1 of the Siskiyou Streamside Protections Review.

The first part of Phase 2 of the Review is completing a draft of the SR report. This draft will be sent to stakeholders and tribes for their input, and we will subsequently respond to this input and adjust the SR report. The Review concludes with bringing the completed SR to the Board for their sufficiency call, which is anticipated in April 2019.

Table 2. Timeline for development of Siskiyou Board materials. Note that tasks for input from stakeholders and Tribes are in **bold**. This table may change as we proceed.

<u>Task</u>	<u>Date</u>	<u>Milestone / Deliverable</u>
<i>Phase 1 - Protocol</i>		
Kickoff outreach with stakeholders and Tribes	Spring 2018	Completed list of contacts for stakeholders and Tribes
Collaborate with partner agencies for contextual information	Spring through Fall 2018	Reports on Fish status & trends, water quality evaluations for final Board materials
Develop literature review protocols	Summer 2018	Protocols for literature reviews
Stakeholder and Tribal input on review protocols and studies to consider	Fall 2018	Record of stakeholder and Tribal feedback on review protocols, and literature to include in reviews
Determine inclusion of literature in reviews	Fall 2018	Literature selected for inclusion based on criteria
Stakeholder and Tribal input on inclusion-exclusion of literature to review	Fall 2018	Stakeholder and Tribal feedback on literature to include in reviews
<i>Phase 2 – Review and Board Decision</i>		
Data extraction, analysis, and writing of literature reviews	Fall 2018/ Winter 2019	Draft reports of literature reviews
Stakeholder and Tribal input on draft reviews	Winter 2019	Stakeholder and Tribal input on draft reviews
Address stakeholder & Tribal input on reviews	Winter/Spring 2019	Final drafts of literature reviews
Present subset of completed work to Board; ODFW, DEQ presentations	Jan. 2019	Subset of completed work for the Board
Present completed work to Board for their determination of sufficiency of riparian protections	April 2019 Board Meeting	Project complete

References

- Collaboration for Environmental Evidence (CEE). 2018. *Guidelines and Standards for Evidence synthesis in Environmental Management*. Version 5.0 (A.S. Pullin, G.K. Frampton, B. Livoreil, and G. Petrokofsky, Eds) www.environmentalevidence.org/information-for-authors. [1 November, 2018]
- Czarnomski, N., C. Hale, W.T. Frueh, M. Allen, and J. Groom. 2013. Effectiveness of riparian buffers at protecting stream temperature and shade in Pacific Northwest Forests: A systematic review.
- Griffith, G.E., J.M. Omernik, , D.W. Smith, T.D. Cook, E. Tallyn, Moseley, K. and C.B. Johnson. 2016. Ecoregions of California (2 sided color poster with map, descriptive text, and photographs). U.S. Geological Survey Open-File Report 2016-1021, map scale 1:1,100,000, <http://dx.doi.org/10.3133/ofr20161021>.
- Lorenzen, T., Andrus, C., and Runyon, J., 1994. The Oregon Forest Practices Act Water Protection Rules. Forest Practices Policy Unit, Oregon Department of Forestry, Salem, OR. <https://digital.osl.state.or.us/islandora/object/osl:85361>
- Pater, D.E., S.A. Bryce, T.D. Thorson, J. Kagan, C. Chappell, J.M. Omernik, S.H. Azevedo, and A. J. Woods. 1998. Ecoregions of Western Washington and Oregon (2 sided color poster with map, descriptive text, summary tables, and photographs). U.S. Geological Survey, Reston, VA. Scale 1:1,350,000.
- U.S. Environmental Protection Agency, 2013, Level III ecoregions of the continental United States: Corvallis, Oregon, U.S. EPA – National Health and Environmental Effects Research Laboratory, map scale 1:7,500,000, <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>.