



Eastern Washington Riparian Restoration

General Description:

- ▲ Overcrowded riparian area
- ▲ Increased disease, insect infestation, parasites (dwarf mistletoe, etc.)
- ▲ Significant tree mortality

Forested riparian areas provide critical riparian functions for fish, other aquatic species and riparian-dependent wildlife. A fully functioning riparian forest typically contains multiple tree species best adapted to the site at a range of age classes and stocking levels. Such forests face a lower risk of catastrophic losses due to wildfire or pathogens that often target specific species and age classes.

Some of eastern Washington's streams are bordered by overcrowded conifer stands. Overcrowding is a common condition that can increase the risk of mortality from insects, disease, pathogens (such as dwarf mistletoe) and wildfire. Active management of overcrowded and/or unhealthy stands can reduce forest health problems and improve long-term riparian functions.

Landowners normally have little financial incentive to restore riparian function because timber harvest opportunities are limited in riparian areas. An alternate plan featuring sound management planning and restoration prescriptions can create financial incentives for a landowner to enhance riparian function and forest health. Allowing trees at risk of imminent mortality to be harvested within riparian management zones can allow landowners to realize some economic return while:

- Restoring riparian stand conditions to provide long-term riparian function.
- Creating properly stocked stands with a mix of native tree species that is best adapted to the site. Appropriately stocked mixed species stands are typically more resilient to insects and disease.

Key components to address to maintain Riparian Function:

Riparian Core Zone

Protect the riparian core zone. This means:

For Western Washington, the 50 foot buffer of a Type S or F Water, measured horizontally from the outer edge of the bankfull width or the outer edge of the channel migration zone, whichever is greater.

For Eastern Washington, the thirty foot buffer of a Type S or F Water, measured horizontally from the outer edge of the bankfull width or the outer edge of the channel migration zone, whichever is greater.

Steps:

1. Complete Alternate Plan (AP) form

2. Complete Forest Practices Application (FPA) form

3. Submit AP & FPA to local region office

4. Meet on-site with Forest Practices (FP) Forester

5. FP Forester issues decision/conditions

Forms:

[Alternate Plan Form](#)

[Forest Practices Application Form](#)

Links:

[WAC 222-12-040](#)

[Board Manual \(Section 21\)](#)



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Region Office](#)



Sediment Filtering

Riparian vegetation helps to filter sediment, reduce the likelihood of landslide events, and regulate the natural erosion process in the riparian area.

Mulch, hay, or strategic water control structures may be necessary due to the lack of understory vegetation.

Live and downed dead trees left in the RMZ will continue to provide some slowing of runoff and filtering of sediment. Leave tops and branches scattered within RMZ if possible.

Measures may be considered to reduce erosion and increase sediment filtration where slopes are greater than 35%: placing of tree tops and slash, grass seeding or mulching, water barring, and limiting disturbance.

Stream Bank Stability

Maintaining stable stream banks will allow channel structures to develop naturally. Maintaining stream bank vegetation is vital to maintaining stable stream banks.

All live trees directly providing bank stability by their root structure must remain.

Dead trees might be taken provided no additional bank instability is created by their cutting or removal.

Leaf Litter Fall / Nutrients

Organic input from riparian vegetation influences water quality and provides an important food source for aquatic organisms.

This function is best provided where live trees remain near the stream channel. Post-harvest trees will continue to expand their canopy, ultimately increasing long term leaf litter contribution.

Large Woody Debris

Large woody debris provides important habitat diversity by providing structure for stabilizing streambeds, building floodplains, storing sediment, and providing habitat for fish and amphibians.

Leave dead trees leaning toward the stream or with a high likelihood to recruit to the stream, especially within the 30' core zone (consult Labor & Industries).

Where large wood is lacking in a stream channel, a large woody debris placement strategy will increase the recovery rate. Consultation with WDFW is required.

Shade

Shade from the canopy of the adjacent riparian area vegetation is the most significant influence on stream temperature. Shade provides cool stream temperatures which is a vital riparian function for fish and amphibians.

Short and long term shade from the overstory should continue to supply adequate temperature control.



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Other components to address:

Wildlife Habitat

Plan for wildlife trees

Dead, dying and live defective trees are an important part of a healthy forest. Trees can actually provide more habitat for wildlife dead than when they are alive. Standing dead and dying trees, called “snags” or “wildlife trees,” are important for wildlife occurring as a result of disease, lightning, fire, animal damage, too much shade, drought, root competition, as well as old age.

Birds, small mammals, and other wildlife use snags for nests, nurseries, storage areas, foraging, roosting, and perching. Live trees with snag-like features, such as hollow trunks, excavated cavities, and dead branches can provide similar wildlife value. Snags occurring along streams and shorelines eventually may fall into the water, adding important woody debris to aquatic habitat. Dead branches are often used as perches; snags that lack limbs are often more decayed and, may have more and larger cavities for shelter and nesting. Snags attract wildlife species that may not otherwise be found there.

All trees of all sizes are potential snags. Unfortunately, many wildlife trees are cut down without much thought to their wildlife value or of the potential management options that can safely prolong the existence of the tree. Wildlife trees offer a one-stop, natural habitat feature.

Slash

Conduct good slash management practices to decrease or limit the risk of insects, disease, or fire to neighboring stands.

Large accumulations of slash may contribute to initiation or exacerbation of mass wasting events (e.g., debris slides, and debris torrents); however, these events are expected to be rare because current forest practices rules prohibit the machine piling of slash and debris within 30 feet of unbuffered streams. Likewise, limbing and bucking within the bankfull channel of Type S, F and Np waters, RMZ cores, sensitive sites, or open water areas of Type A wetlands is prohibited.

Equipment Limitation Zone

Maintain a 30-foot wide Equipment Limitation Zone measured horizontally from the outer edge of the bankfull width of a Type Np or Ns Water. This applies to all perennial and seasonal non-fish bearing streams. Where the risk of erosion is very high, additional width should be considered.

Stocking

Ensure proper stocking and diversity of site appropriate tree species (resistant to ongoing insect and disease mortality within the area).

Consider reducing the number of stems and percentage of Grand fir composition, as this species is more prone to insects and disease. Utilize harvest methods that will restore natural forest structure and diversity.



Small Forest Landowner Resources:

This tutorial provides specific steps to take to address overstocked stands in eastern Washington.

[Alternate Plans for Restoring Riparian Function in Eastern Washington -Identifying Stands at Imminent Risk from Insects, Disease and Fire](#)

Background

Forested riparian areas provide critical riparian functions for fish, other aquatic species and riparian-dependent wildlife. A fully functioning riparian forest typically contains multiple tree species best adapted to the site at a range of age classes and stocking levels. Such forests face a lower risk of catastrophic losses due to wildfire or pathogens that often target specific species and age classes.

Some of eastern Washington's streams are bordered by overcrowded conifer stands. Overcrowding is a common condition that can increase the risk of mortality from insects, disease, pathogens (such as dwarf mistletoe) and wildfire. Active management of overcrowded and/or unhealthy stands can reduce forest health problems and improve long-term riparian functions.

This part of the manual provides information to:

- Help identify riparian forests where riparian functions are threatened by significant tree mortality. A riparian forest is considered to be susceptible to significant tree mortality when within five years due to the effects of insects, diseases, pathogens or recent fires, the riparian forest would be expected to have only fifty or fewer trees larger than 6 inches dbh per acre with healthy crowns remaining; and,
- Identify where active management prescriptions for these stands can improve riparian functions. This information will help Interdisciplinary (ID) Teams evaluate the relative value of actively managing the riparian area to gain riparian function as part of an alternate plan.

Management Considerations for Restoring Riparian Function

Reducing excessively high tree mortality rates from insects, disease, pathogens (such as dwarf mistletoe) and fire can help restore riparian functions. Forest management practices designed to restore naturally sustainable tree species composition and stocking levels may help reduce high tree mortality rates.

Allowing trees at risk of imminent mortality to be harvested within riparian management zones can allow landowners to realize some economic return while:

- Restoring riparian stand conditions to provide long-term riparian function.
- Creating properly stocked stands with a mix of native tree species that is best adapted to the site. Appropriately stocked mixed species stands are typically more resilient to insects and disease.

The following information is provided to help identify riparian areas at risk of significant mortality that may benefit from active management to improve riparian functions.

Candidate Riparian Stands

Riparian forests susceptible to significant tree mortality and loss of riparian function may benefit from management strategies to promote forest health and enhance riparian function. Riparian stand conditions and risk of fire loss, insect attack, and disease attack vary. However, a stand is likely to be susceptible to riparian function loss when:

- Fire has already killed the trees or mortality is likely to occur as a result of fire damage.
- Diseased or insect-infested stands show evidence that the disease or insect is present either within the riparian area or in adjacent stands, and would be expected to cause significant mortality in the riparian area within five years. Most insects and pathogens seek specific host tree species at specific stand ages. In a mixed stand, therefore, mortality expected from all present insects and diseases would be evaluated together to determine stand eligibility for riparian function restoration work.

A riparian forest susceptible to significant tree mortality is likely to benefit from active management to promote forest health and restore riparian function in the riparian zone when:

- Within five years, due to the effects of insects, disease, pathogens or recent fire, the riparian forest would be expected to have only fifty or fewer trees larger than 6 inch dbh per acre with healthy crowns remaining; and
- Active management would be expected to provide improved riparian function faster than the unmanaged stand while maintaining comparable, interim protection of riparian function.

Potential Management Prescriptions

The purpose of riparian management zones is to place riparian forests on a course toward long-term health while achieving natural rates of riparian function. This manual is intended to help identify the conditions where active management of the riparian forest would be expected to improve riparian functions and conditions. It is not intended to help prevent naturally occurring mortality. Management prescriptions need to be based on restoring riparian functions and reestablishing a healthy natural riparian forest structure and composition.

Develop prescriptions that are appropriate for the soil, climate, and risk conditions of the site to:

- Limit riparian management to the scope of the problem (e.g., geographic area, tree species, and tree ages facing imminent mortality).
- Maintain healthy trees of host species within the riparian area if not within proximity to an insect or disease pathogen that may cause tree mortality within five years (proximity varies by type of disease or insect).
- Set the riparian stand on a significantly better trajectory towards achieving the following riparian functions:
 - Provide for large woody debris availability and recruitment.
 - Seek opportunities for short-term shade to the stream.
 - Provide long-term shade to streams.

- Provide bank stability.
- Provide nutrient and litter fall.
- Assure sediment filtration.
- Plan for wildlife trees.
- Conduct good slash management practices to decrease or limit the risk of insects, disease, or fire to neighboring stands.
- Maintain an equipment limitation zone.
- Ensure proper stocking and diversity of site appropriate tree species (resistant to ongoing insect and disease mortality within the area). Consider reducing the number of stems and percentage of Grand fir composition, as this species is more prone to insects and disease.
- Utilize harvest methods that will restore natural forest structure and diversity, or will remove species/age classes at imminent risk of mortality.

Small Forest Landowner Process

Landowners who believe a riparian area is degraded due to insects, disease or fire may request assistance from trained agency staff or practitioners (see DNR Small Forest Landowner website at http://www.dnr.wa.gov/BusinessPermits/Topics/SmallForestLandownerOffice/Pages/fp_sflo_overview.aspx). Landowners may also contact experts from the Department of Fish and Wildlife, Department of Ecology and affected Indian tribes who will likely participate on the alternate plan ID Team. Early contact in the planning phase can facilitate development and approval of the alternate plan. Trained experts can help the landowner determine if a riparian stand is threatened with imminent mortality. In addition, DNR is developing technical guidance for assessing the rate of spread and mortality from forest insects and pathogens, as well as trees damaged by fire. Completed and approved guidance will be posted on the DNR Small Forest

Landowner website at

http://www.dnr.wa.gov/BusinessPermits/Topics/SmallForestLandownerOffice/Pages/fp_sflo_overview.aspx.

Small forest landowners that have verified the need for restoration of riparian function can submit an alternate plan as part of a forest practices application as described in WAC 222-12-0401. The alternate plan must include management activities designed to reduce unnatural levels of tree mortality from fire, insects and disease, and to bring riparian forests back into a structure and composition well adapted for the site. The alternate plan must also include information on the current condition of degraded riparian functions and how the proposed management prescriptions will achieve and restore the riparian functions.

Questions?

[Click here to find your DNR Region contact information.](#)